GDV Screening

The program **GDV Screening** is designed for analysis of functional state of subjects by calculation of complex GDV parameters of organs and body systems and for their comparison with reference parameters of a practically healthy person. The program calculates numerical characteristics, such as integral area, integral entropy and activation coefficient of separate organs and systems. The program has a well-developed means to carry our visual analysis of GDV-images in sectors referring to the selected organ or body system, and also for monitoring the numerical parameters corresponding to these sectors. To carry out the analysis you need to load into the program static GDV-images of 10 fingers taken with and without special filter.

The demo version makes it possible to work only with built-in data; the functions of creating, loading and saving files of subjects are blocked; you also can not load GDV-images from disk or start the GDV Capture to capture these files.

System requirements

The program can be operated in the following Microsoft Windows operating systems:

- Windows 2000
- Windows XP

Recommended computer configuration:

- Processor - P 4 or higher
- Memory - 256 Mb or more
- HDD free space - 5 Gb or more

Working procedure

The program can simultaneously carry out the data processing for several subjects with a possibility of having several GDV captures for each of them (e.g., taken on different dates). A GDV capture is one or two sets of files of GDV-images of fingers taken with and without filter.

The list of captures and personal data of the subject (name, gender, age, etc.) are saved in the file or on the disk. Therefore to process the subject's data it is necessary either to create a new file, or to download the previously created one and then add the new capture. When you want to close the program or delete subjects from the list, a request will be made if you need to save all changes during this sйance.

Thus a typical working procedure looks as follows:
1. Create a new file or download the existing one.
2. Add the new capture.
3. Download the subject's GDV-images with and without filter.
4. Calibration (if this procedure has not been carried out before).
5. Check settings of noise filtration, pseudocoloring mode, and if necessary, introduce your corrections
6. Corrections of inner ellipses.
7. Analysis of functional state by organs and systems.
8. Analysis of numerical parameters of organs and systems.
9. Creating a table of numerical data.
10. Building comparative diagrams of numerical parameters of organs and systems.

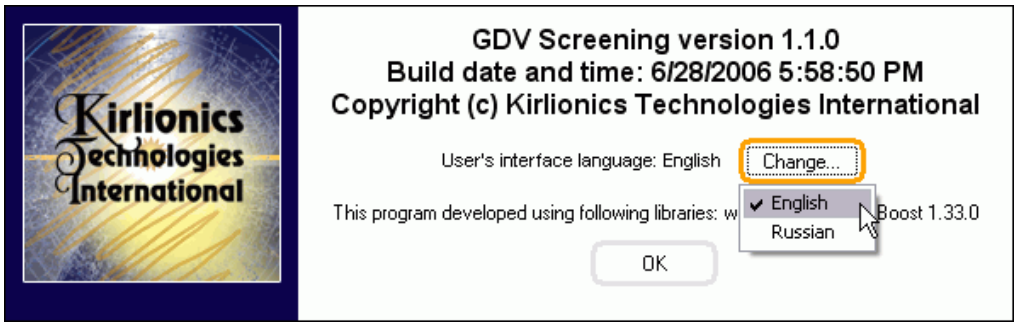
Overview GDV Screening

The interface of the **GDV Screening** is arranged as a dialog containing consecutively switched pages. Part of pages is available only after loading or processing of data. The program interface is designed in such a way that the user can consecutively realize construction and visualization of **GDV Screening** in accordance with standard analysis procedure.

When the program is launched the start page is displayed from where the user can start working.

When you select the **User Manual** button, you will see the description of working with programs.

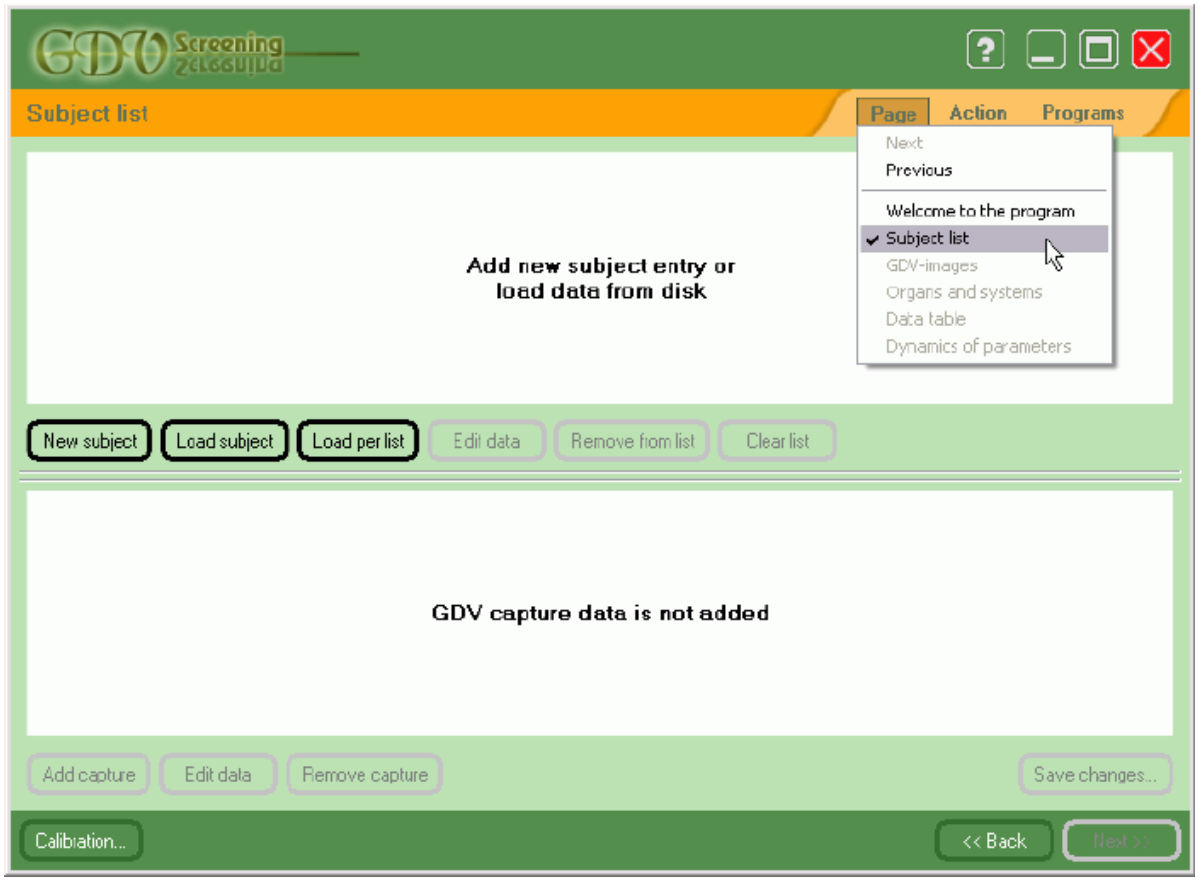
The menu item **About program** will display the data on the installed program version, time and date of its issue, the hardlock number, and there is also a possibility to change the language of the user interface to any of the supported ones without re-installing the program. To do this you need to check the required language and restart the program. The interface language will change for all programs in the package.



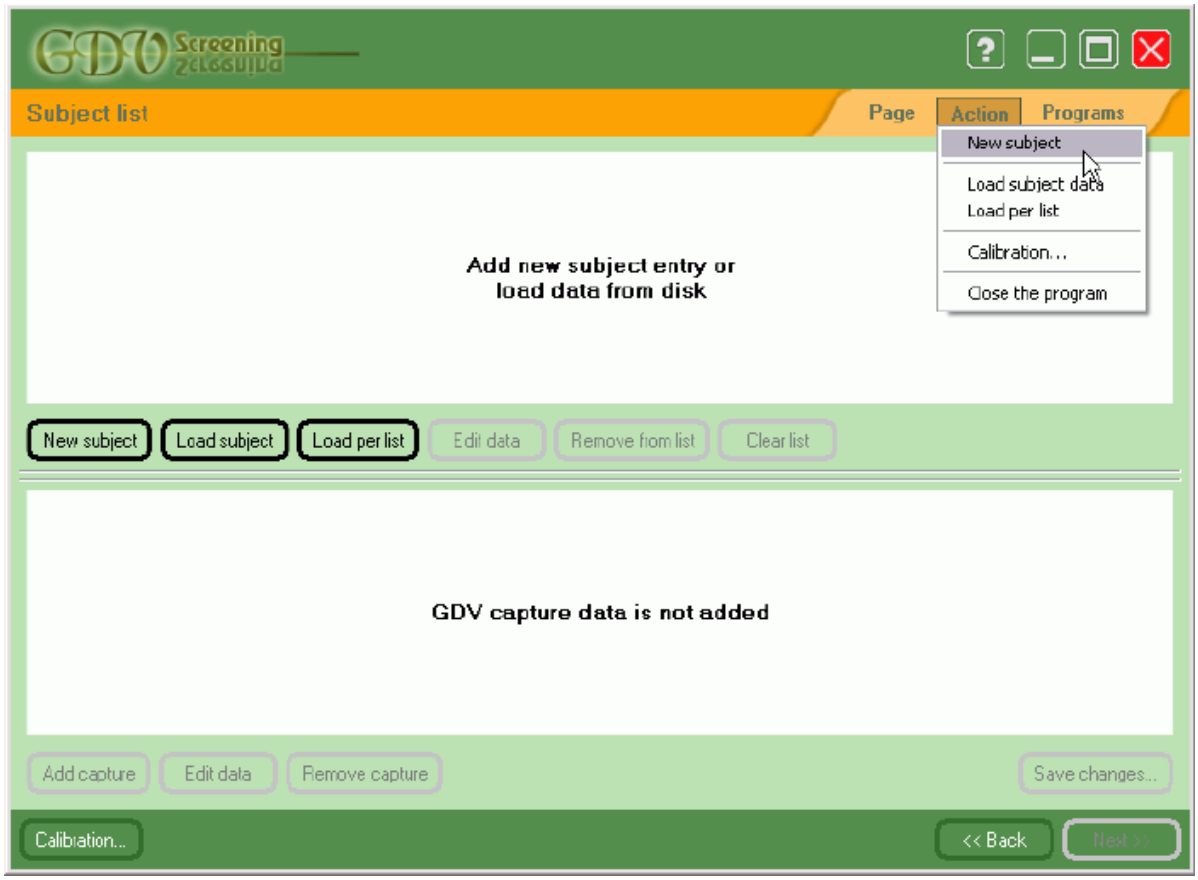
When you select **Start work** click the left mouse button to go to the next page Subject list.

In the upper right part of the page **Subject list** there is the menu of the program.

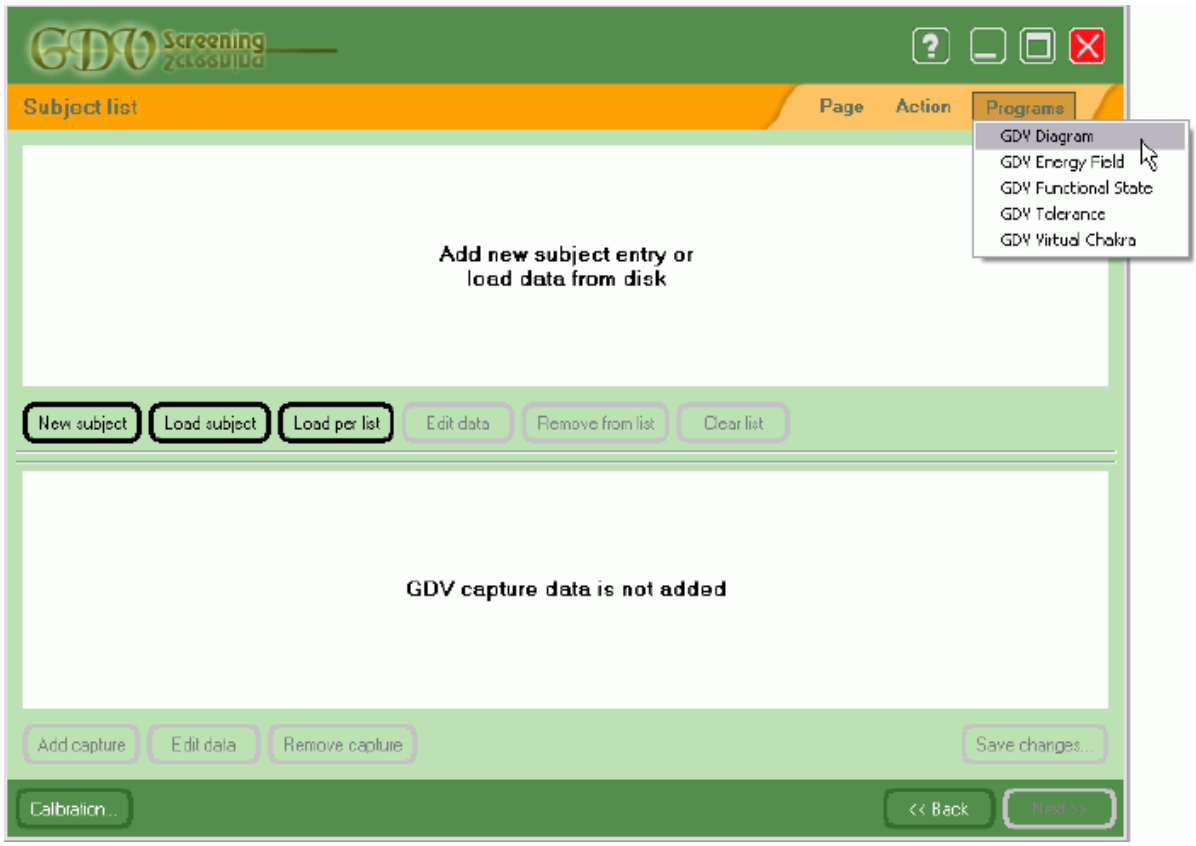
When you click on the button **Page** the menu will appear with a list of all pages where you can arbitrary switch to other pages of the program. The current page is checked; you can choose another one with the left mouse button but you need to consider that part of pages will be available only after the loading or processing of the GDV-images. You can switch between pages during work using buttons **Previous** and **Next** in the menu **Page** or in the lower right part of the page **Subject list.**



If you press the button **Action** a menu will show up with a list of possible actions on this page including both operations common to all pages of the program (“Go to subject's page”, “New subject”, etc) and specific operations for the current working window.



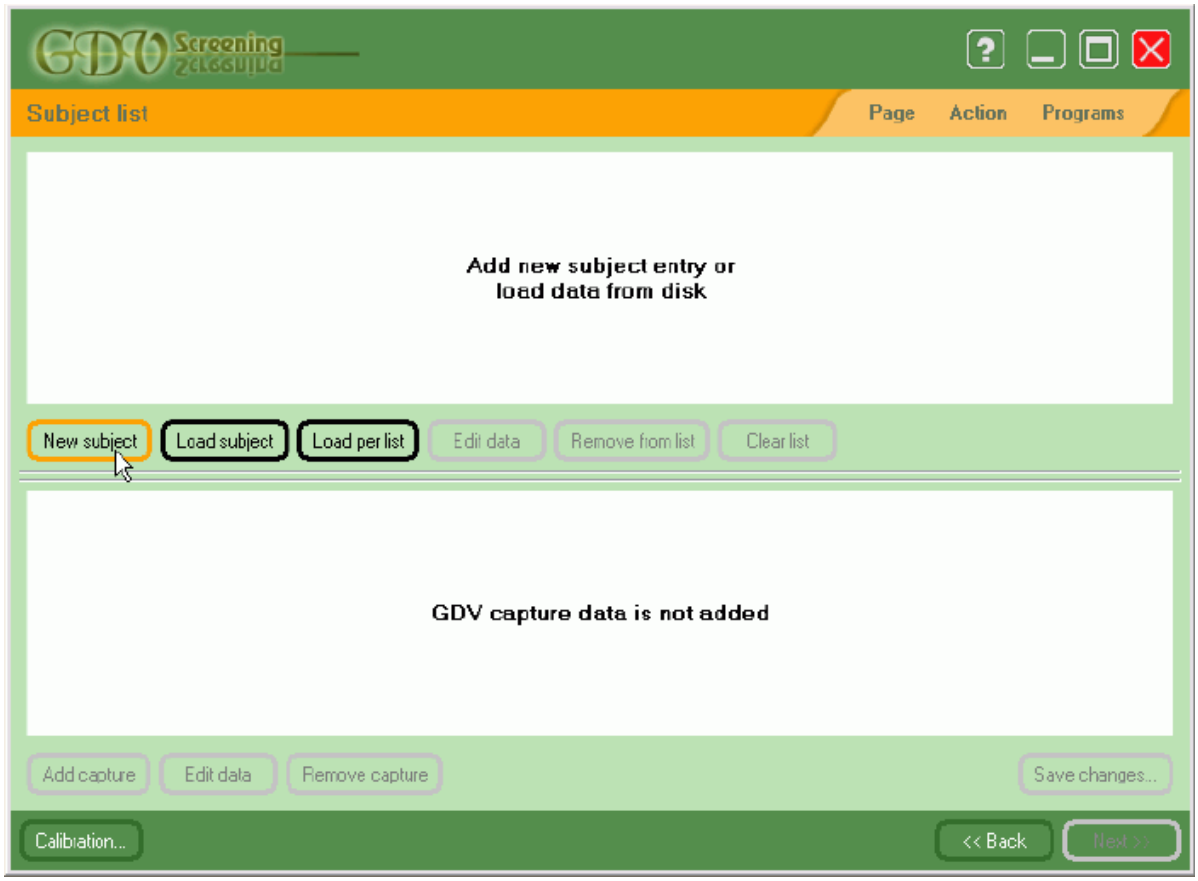
The **Programs** button makes it possible to start any program from the **GDV Software** package installed on the computer. When the selected program is launched the files of subjects open in the current programs are automatically loaded into it. Further on during work there will be automatic synchronizing of the altered data among all programs to where the altered subject's file is loaded.


Screening
Subject list
Page
Action
Programs
GDV Diagram
GDV Energy Field
GDV Functional State
GDV Tolerance
GDV Virtual Chakra
Add new subject entry or
load data from disk
New subject
Load subject
Load per list
Edit data
Remove from list
Clear list
GDV capture data is not added
Add capture
Edit data
Remove capture
Save changes...
Calibration...
<< Back
Next >>

Adding an entry of a new subject data

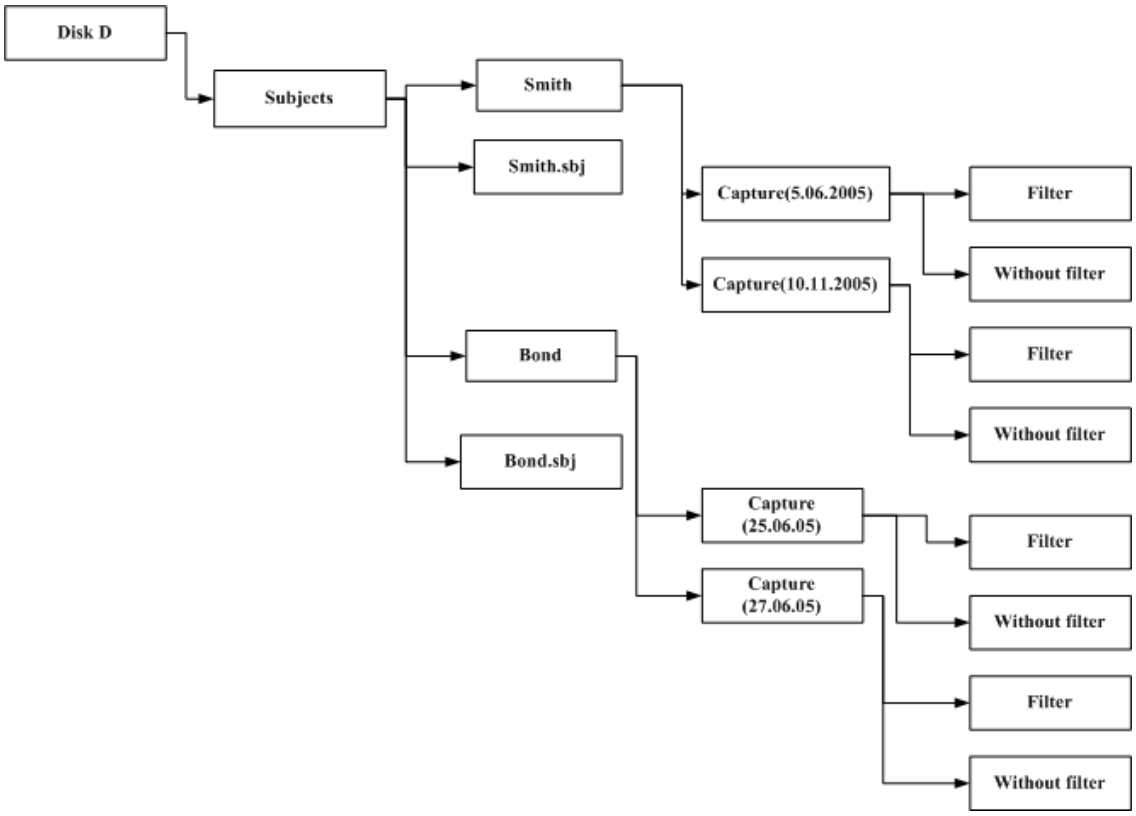
On page **Subject list** there are two lists; the upper one is responsible for the information about subjects and the lower one for the information about captures assigned to each of subjects loaded into the upper list.

To work with the program it is necessary to add the information about a new subject into the upper list: press the button **New subject** (shown with the cursor in the figure).



The subject's personal data and the GDV-images file list are saved in the file with the .**sbj** extension. The file is created on the disk, and its content is updated at the moment when you finish working with the program. Inside, the file contains references to the files with GDV-images. That is, to transfer the information onto another computer you need to copy the required .sbj files together with the appropriate files with GDV-images keeping their arrangement with reference to each other in the directory structure.

For the convenience of the data storage and transfer to other computers, it is recommended to keep a certain structure of subject data folders on the disk. In particular, the following example, schematically displayed, is very convenient. In this case to transfer the information about, e.g. Smith you need just to copy the folder **Smith** with all its contents (Capture (5.06.2005), Capture (10.11.2005)) and the file **Smith.sbj**. If there is no need to transfer the GDV-images you can just copy the ***sbj** file. In such case the program will enable you to preview the previously calculated data but re-processing will be inaccessible.



When you press the button **New subject** the subject's personal data window will show up.

The file name with the **sbj.** extension to where the subject's data will be saved is formed by the program automatically based on the subject's name and the current path to the GDV data base. This path is normally selected by the user when installing the software and it is not to be changed further on. However, using the button **Browse...** you can indicate a new path to the GDV data base.

In the upper part of the window enter the subject's personal date: name of subject – in the line **Name** (e.g Marina), indicate the date of birth, select sex, and, if necessary, put down your comments to this subject. Button  enables to enter or edit the date of birth using the calendar.

In the lower part of the window there are the control elements that enable to add GDV captures for the given subject. By default, it will be named **Capture 1**. If necessary, you can enter the name corresponding to the specific character of the test (e.g, before and after treatment). Right from this window, using button 

, you can indicated the path to the GDV images with or without filter if the images have already been captured before and saved to disk. Besides, you can start the **GDV Capture** program to capture GDV images by button 

. The line **Date** is filled out automatically after loading or capturing GDV images. Enter additional information about capturing in the field **Remark**.

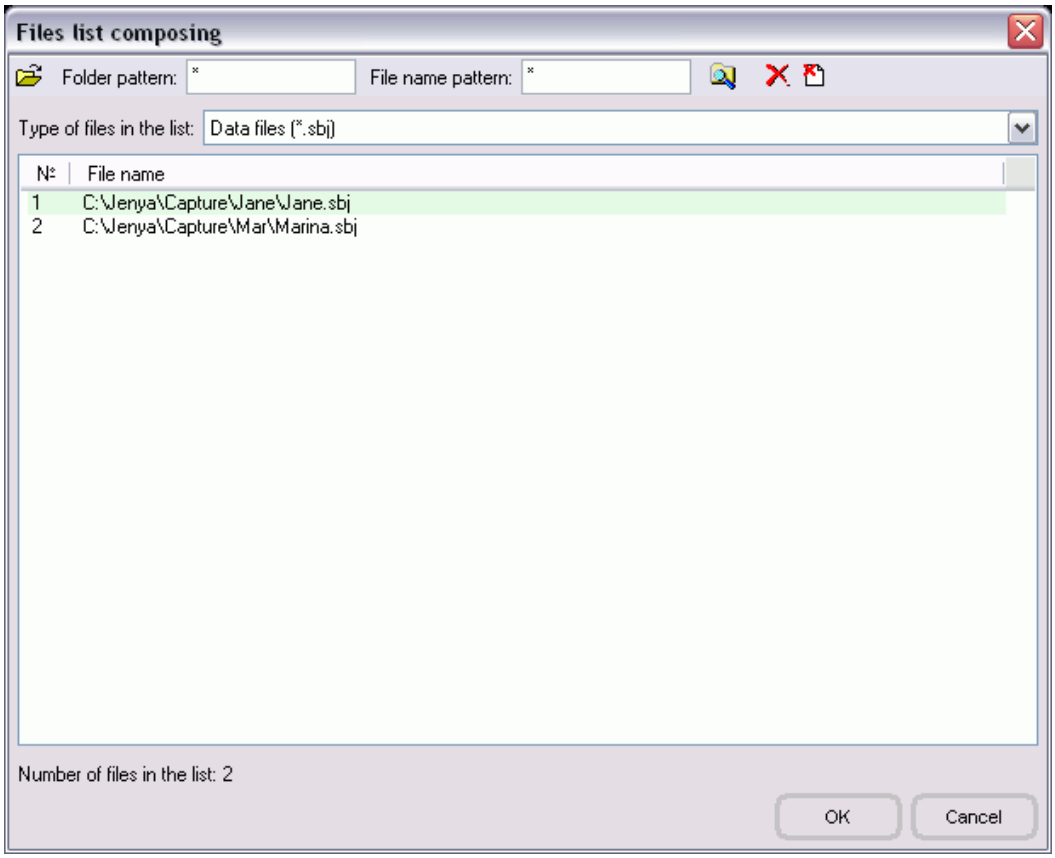
When you finish entering data press **Done**, and on page **Subject List** there will show up the entries about the subject and the newly added capture.

Before the subject's name and names of captures there are checkmarks to check/uncheck the processing of a single subject or capture. It means that you can process/view not all loaded ones but only selected sets of captures, and not only loaded subjects but only selected ones. To check/uncheck you need to doubleclick the left mouse button.

To work with the upper list the following buttons are provided below the list.

The button **Load subject** enables to load information about the subject from the previously saved file.

The **Load per list** button enables to for a list of files of subjects and to load this data into the program from the window **Files list composing**.



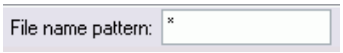
The window shows a list of files with extension **.sbj**, which need to be open. You can edit the list using the following buttons:

 enables to add to the list the files with **.sbj** extension from the selected folder on the disk

 deletes all selected files with .**sbj** extension from the list

 deletes all files with **.sbj** extension from the list

Using the **Folder pattern**  and

File name pattern  you can load into the list not all files but only those that meet a specific condition. In these input fields you can enter any part of the folder or file name. You can also use the two special symbols **"*"** and **"?"**. **"*"** means any number (including 0) of any symbols. **"?"** means just one symbol. For example, you have a set of files of 10 fingers and you need to open the files with fingers of the right hand taken with filter. To do it you type ***Filter*** in the **Folder pattern** field, and type **?R*** into the **File name pattern** (naturally, you need to name the files and folders on the disk in an appropriate way). Then when you scan the selected folder, only the required files will be loaded into the list.

When you have finished selecting the parameters press **OK.**

Use the button **Edit data** to enter changes in the personal data of the selected subject.

The button **Remove from list** enables you to remove the selected recording about the subject

from the program. This action does not result in data file removal from the disk but only increases the memory space.

Using the button **Clear list** you can delete all loaded data from the program memory.

To work with the lower list the following buttons are provided:

Add capture – to add a new capture for the subject selected in the upper list.

Edit data – to introduce changes and to add comments to capture selected in the lower list.

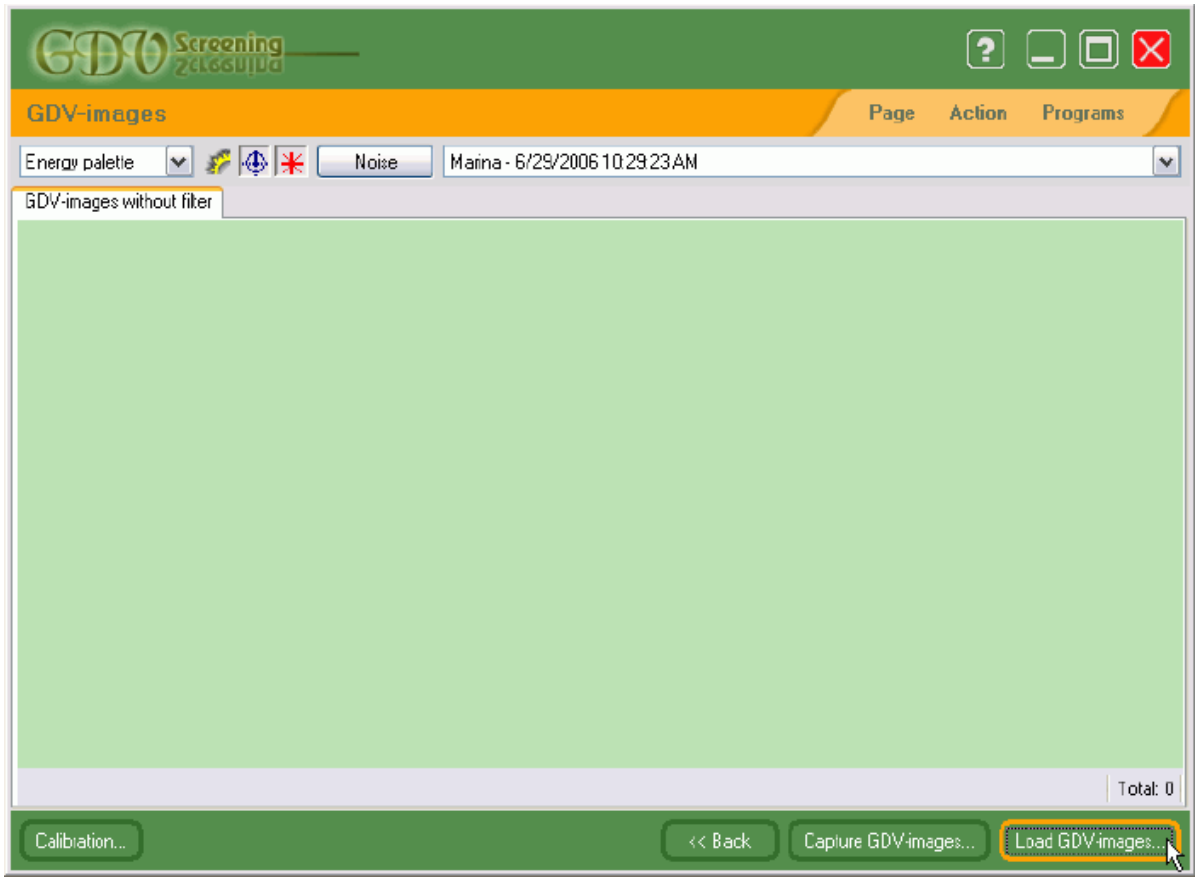
Remove capture – to delete capture selected in the lower list.

To save changes press **Save changes....**

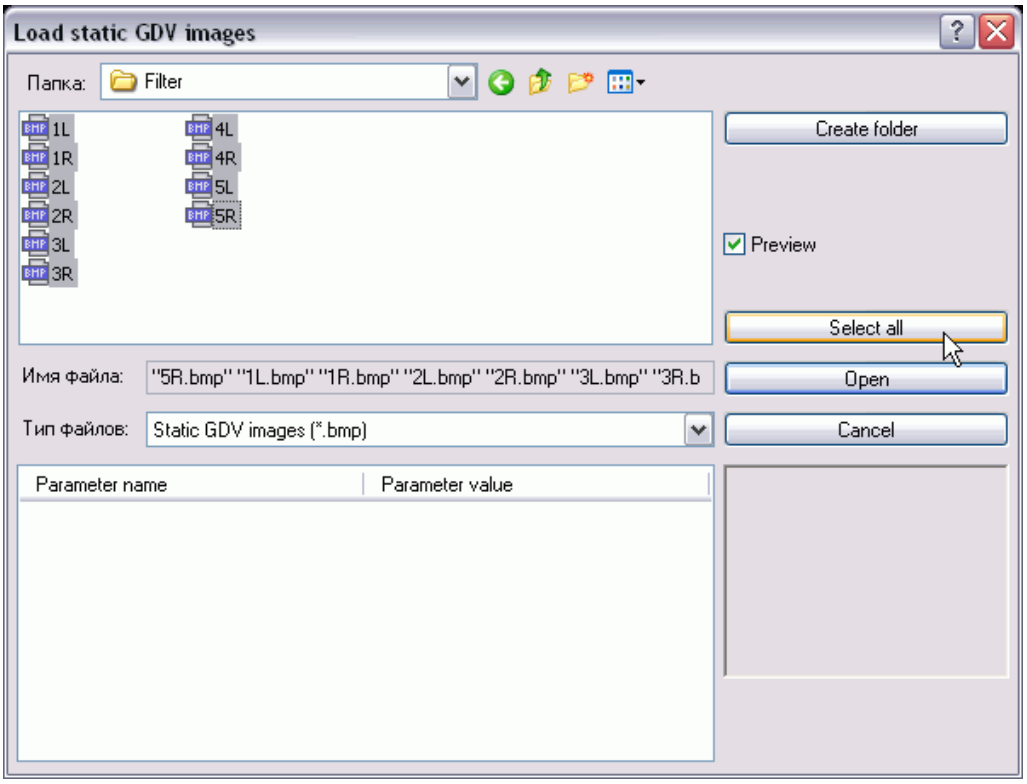
To switch to another **GDV-image** page use the button **Next**.

Loading GDV-images

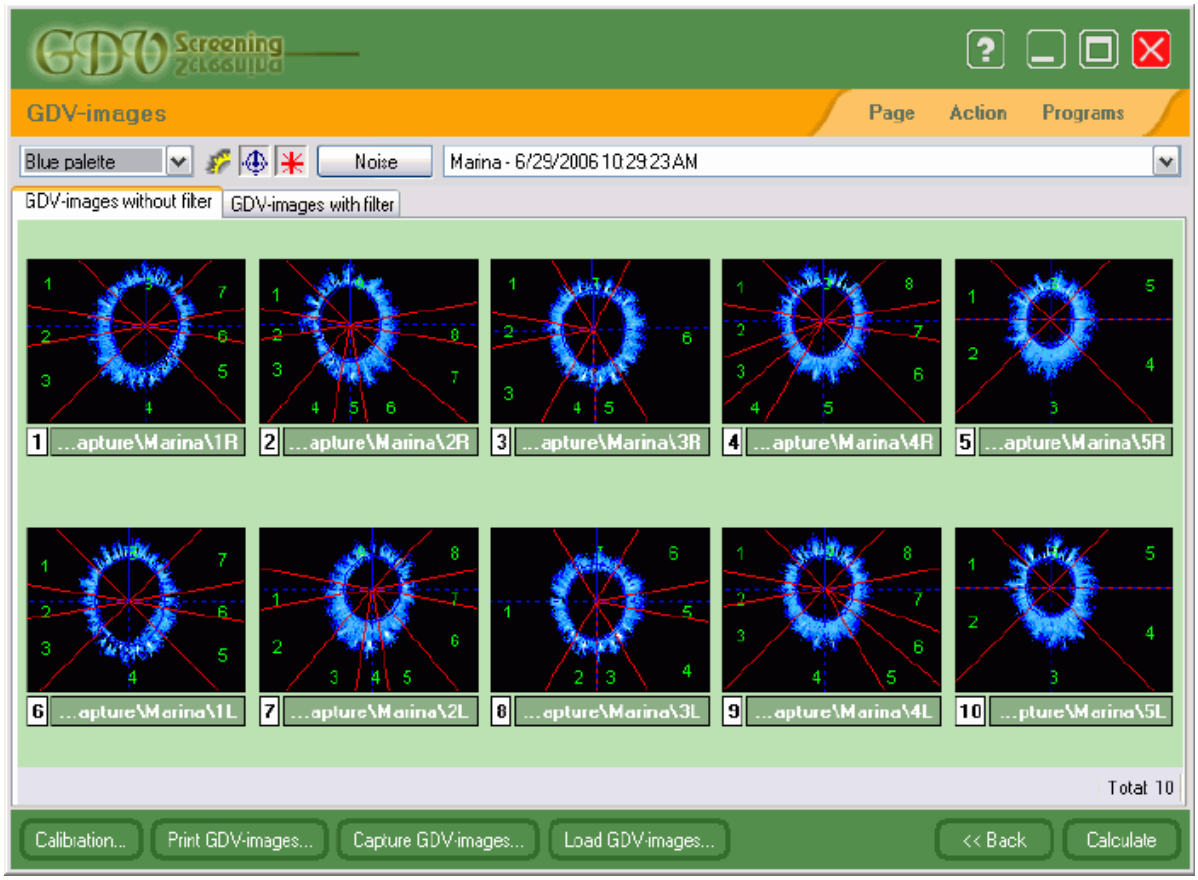
Loading of GDV images is done on the GDV images page and also in the subject's window with the **Load GDV images** button (it is indicated with the cursor in the figure). The files of GDV images are to have in their name the finger indices 1R - 5R, 1L - 5L.



To load GDV-images you need to press the button **Load GDV-images** in the shown-up window and indicate the path to the folder where the GDV-image set is stored, then press the buttons **Select all** and **Open**.



The pictures of the subject's GDV-images are loaded into the GDV-image window.



You can load either the GDV-images captured without filter, or the images captured with and without filter. First you need to load GDV-images captured without filter. As soon as this type of GDV-images is loaded the page will show an additional tab of **GDV-images with filter**.

To load GDV-images taken with filter you need to switch over to the tab **GDV-images with filter** in the upper part of the GDV-image window, press the button **Load GDV-images** again and repeat the same steps as for GDV-images taken without filter.

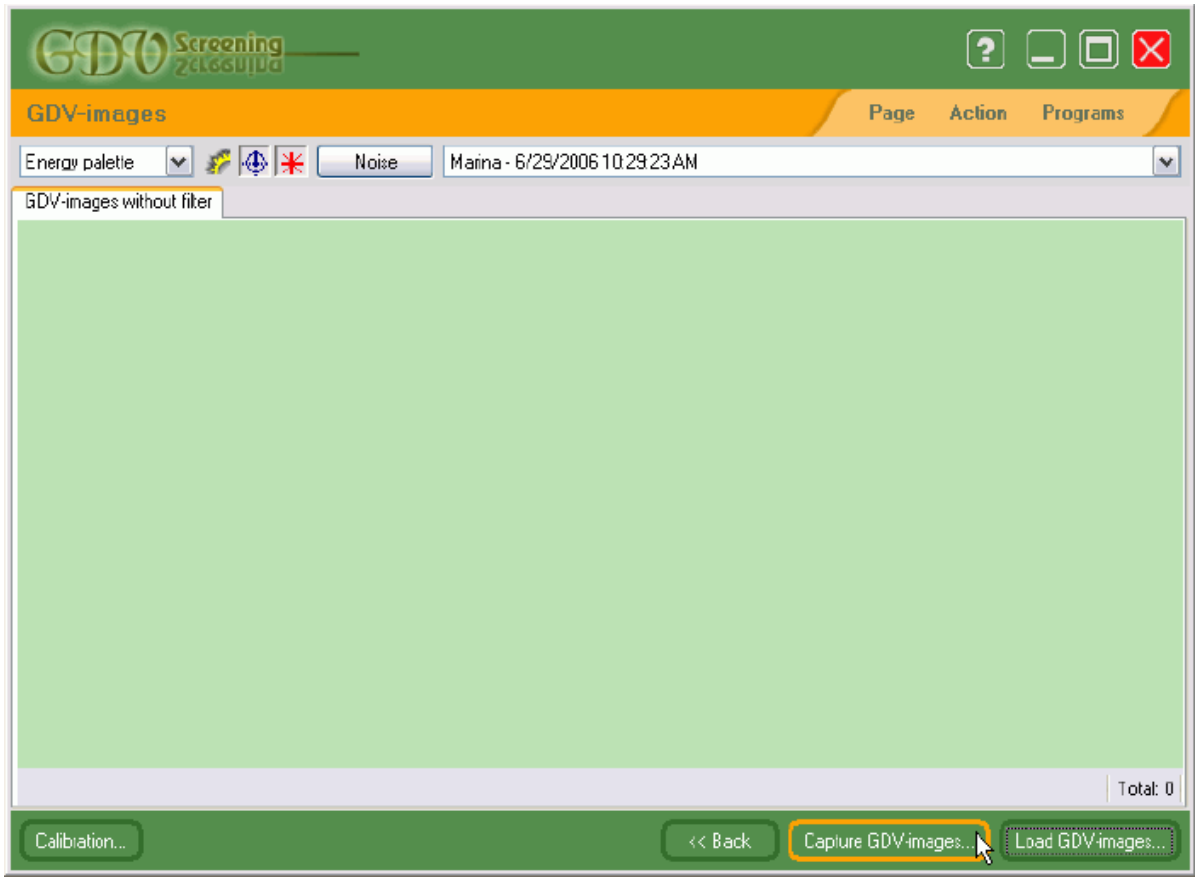
Use the **Calibration** button for calibration of the loaded GDV-images.

Use the button Print GDV-images to print out the pictures of the loaded GDV-images with an overlay of sector division by Korotkov.

Use the **Load GDV-images** button if you want to reload GDV-images.

Capturing GDV-images

On page **GDV-images** there is the **Capture GDV-images…** button that makes it possible to capture GDV-images from any program of the **GDV Software** package.



The GDV-image capture process is carried out in the **GDV Capture** program. When you save the captured GDV-images in this program the following structure of folders on the disk will be automatically created:

...
<Subject 1>.sbj
<Subject 1> (GDV Images)
<Name of capture 1>
GDV-images without filter
1R.bmp
2R.bmp
3R.bmp
…
GDV-images with filter
1R.bmp
2R.bmp
3R.bmp
…

The lines containing in **< >** will be replaced by data input by the operator when creating the subject's account and during GDV-capturing.

Until the **GDV Capture** is closed the work of the program from where the call is made will be blocked. After saving the captured GDV-images and closing the **GDV Capture** program the

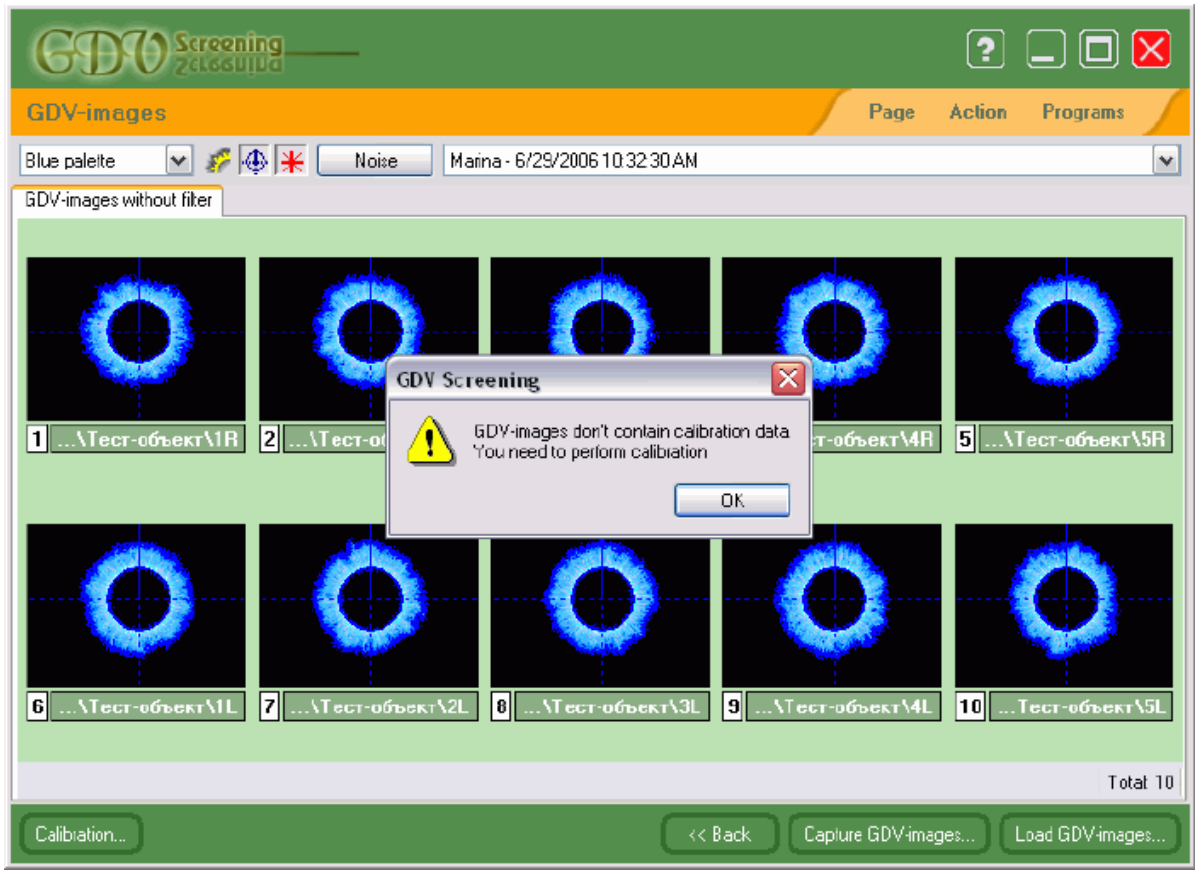
images will automatically load to the **GDV-images** window. The protocol of capturing GDV-images is described in details in the instruction to the **GDV Capture** program.

Calibration

To carry out calibration you need to capture GDV-images of the test object that will be used to calculate calibration parameters. It is important that GDV-images of the test object should be captured at the same time, same place and under the same conditions that those of the subjects.

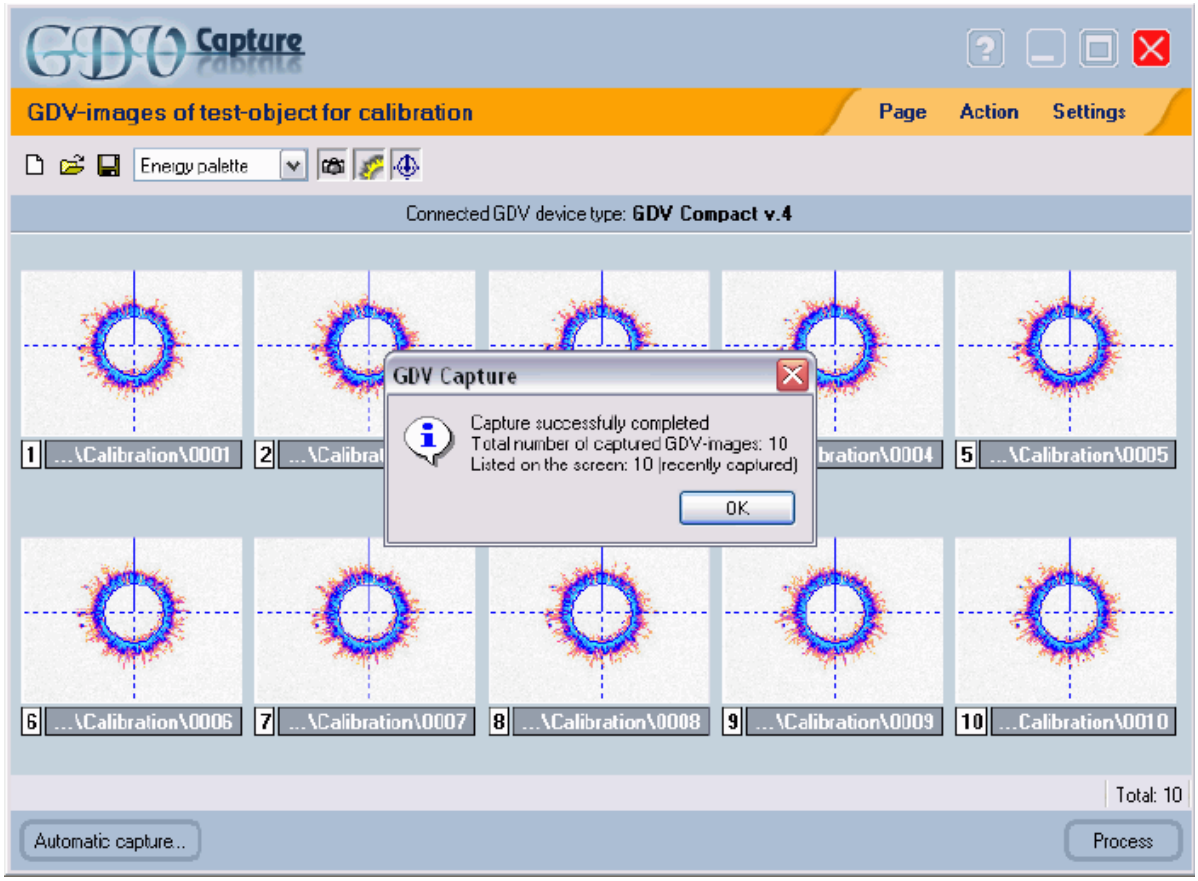
The calibration data is saved in the GDV-images files together with the center coordinates, ellipse parameters and a number of other image characteristics. With the first loading of GDV-images into the program the results of the latest calibration on the given computer will be automatically assigned to all images. If calibration was not done before, the program will offer you to do the calibration.

To carry out calibration you need to press **Calibration…** in the right lower part of the **GDV-images** window. The program **GDV Capture** will be launched in the calibration mode.

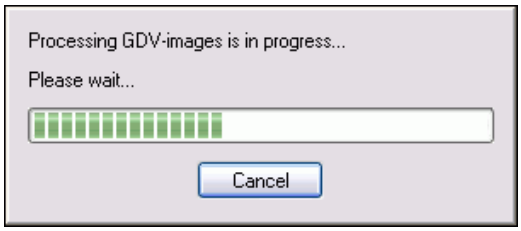


The calibration process begins with capturing or loading GDV-images of the test object. You will need no less than 10 GDV-images of the test object for processing. Before processing you need to save all GDV-images. A more detailed description of loading or capturing GDV-images see in the instruction to the **GDV Capture** program.

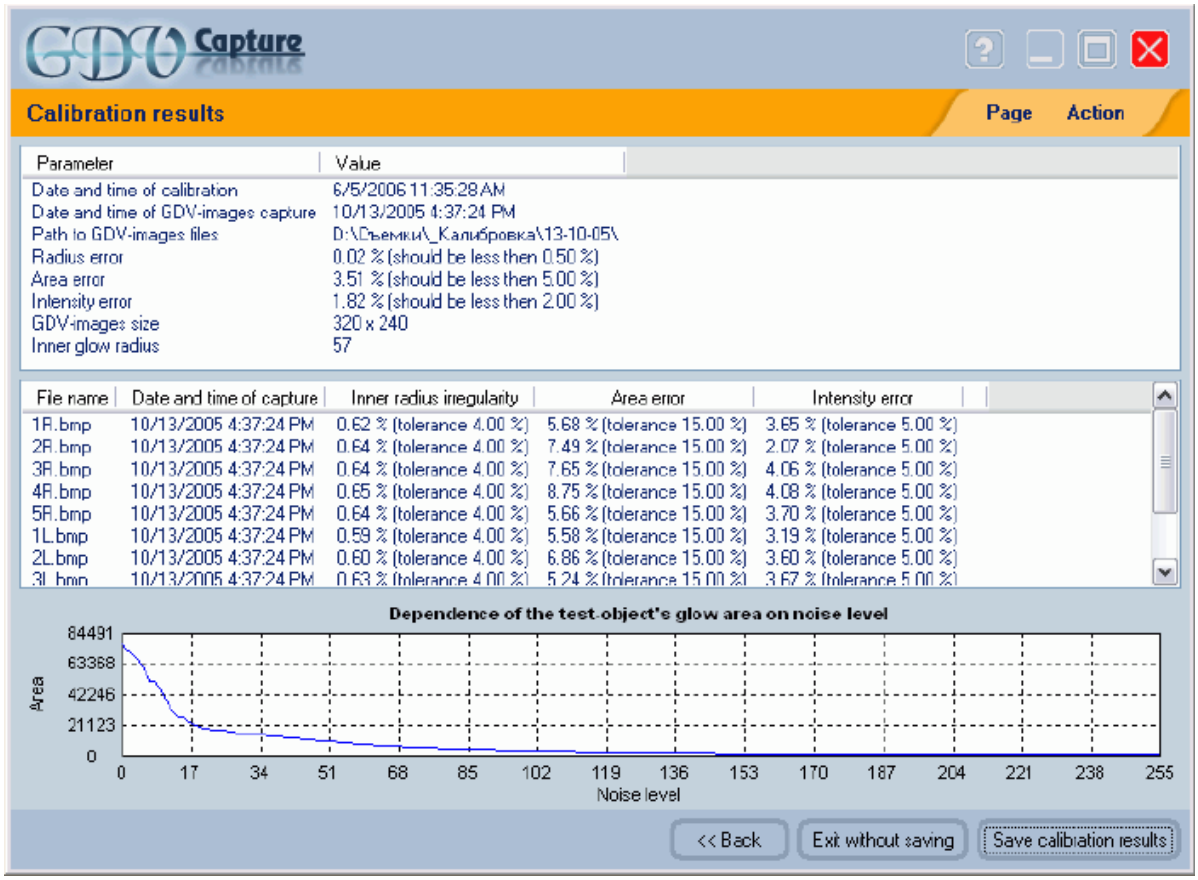
It is important to make sure that GDV images of the test object have no defects, for example, due to misplacement of the test object. Such defects can distort calibration data which will make it impossible to obtain reliable information in the GDV image processing programs.



After loading or capturing GDV-images press the **Process** button to calculate calibration parameters.

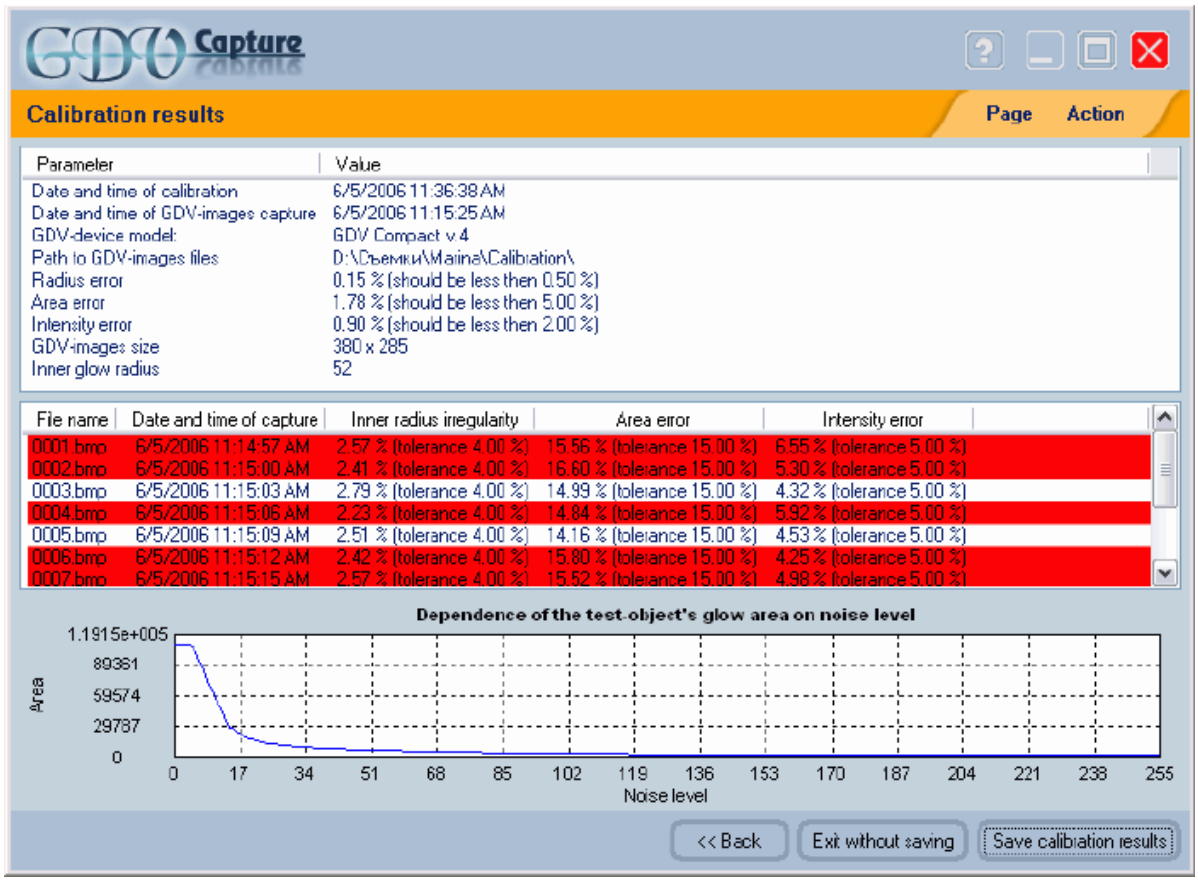


After processing is finished a window with calculation results of parameter calibration will show up.

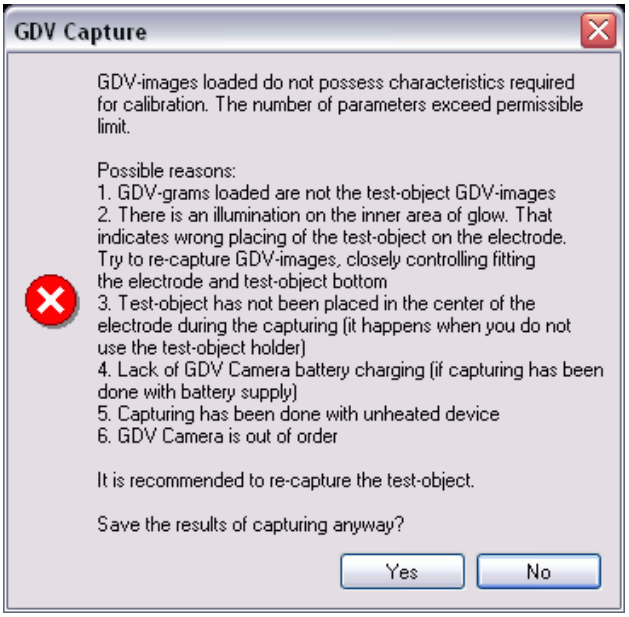


If calibration results are within the norm, save them using the button **Save calibration results**.

If calibration results deviate from normal, the program will mark them in red. Such data are not recommended to be used for further GDV image processing and analysis.



When you try to save such parameters the program will inform you on possible reasons of unsatisfactory calibration results.



In such case it is recommended to carry out re-calibration beginning from another registration of the GDV images of the test object.

Noise filtration

The window **Noise filter parameters** is opened using the button **Noise** in the upper part of the Dynamic GDV-images page.

A GDV-image is a number of points (pixels) each of which is characterized by the glow intensity – a value within 0 - 255. Zero intensity corresponds to the absence of glow in the given point, and 255 indicate maximal glow intensity.

The GDV-image spectrum is the function that determines the number of points with specified intensity. Fig. shows a typical GDV-image spectrum. The horizontal axis shows the intensity and the vertical one the number of image pixels with preset intensity. Any video camera used to register GDV-images has a certain error of performance. Therefore the images contain evenly spread “noise” points of low intensity. The figure shows the part of spectrum corresponding to there noise pixels in grey. The blue color indicates the spectral region corresponding to the brightest and most informative point of gas discharge glow around the subject.

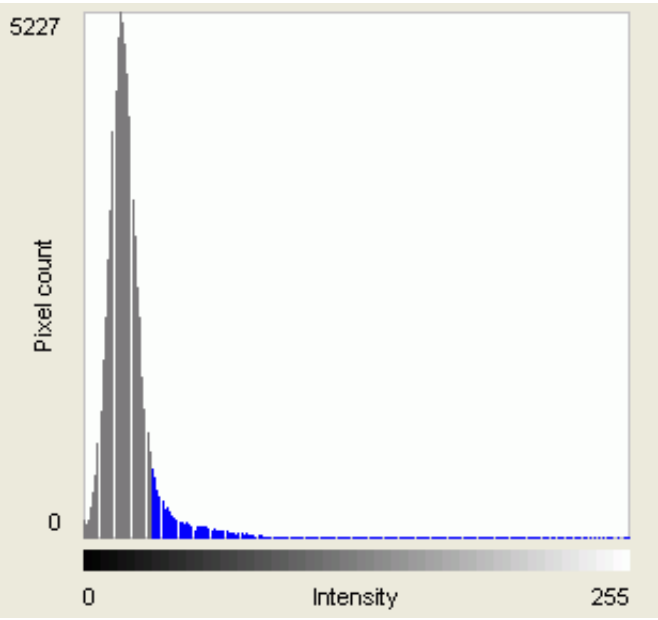


Fig. Typical spectrum of a GDV-image

The video camera performance error is not the only noise contribution to GDV-images; it also may be dirt on the work surface of the instrument. It may result in separate bright spots or fragments that also should be filtered.

As a result, noise filtration of GDV-images is carried out in two stages. First, you need to remove pixels whose intensity is equal or less than a certain limit. There are two ways of setting this limit:

1. The limit is set directly– a corresponding parameter of the program is called «absolute noise level»;
2. The limit is determined automatically for each image by a certain characteristic of the GDV-image spectrum.

The latter method is regulated by the two parameters – «relative noise level» and «basic intensity». A relative noise level determines the percentage of the limit value for filtration calculated from the selected basic intensity. There are 5 options of basic intensities:

1. Average – an average intensity calculated by analysis of all points of image.
2. Average + RMS – an average intensity of all points of image plus standard intensity deviation.
3. Median – a median of the image points intensities.
4. Peak – the most frequently met intensity value.
5. Threshold – a value exceeding the intensity peak (the number of pixels containing this value is less than 1% of the total amount of image points).

At the second stage of filtration a list of image fragments is built – groups of glow pixels situated nearby (the principle of 8-connectedness is used: two points are neighboring if their coordinate values have not more than one-unit difference, i.e., the neighboring of the given points are those being in one of the eight nearby positions) For each fragment the area is calculated, i.e., the number of pixels in it. Then you need to remove from the GDV-image all fragments whose area is smaller than the specified one. It is regulated by the parameter «minimal fragment area». The value of this parameter is 10 by default and usually does not require any changes.

For the convenience of processing GDV-images of liquids (that may splash during a discharge), and also if there is edge flare (external lighting), another parameter has been introduced, - the «working radius». If this parameter is non-zero, all pixels whose distance to the glow center exceeds the specified value are removed.

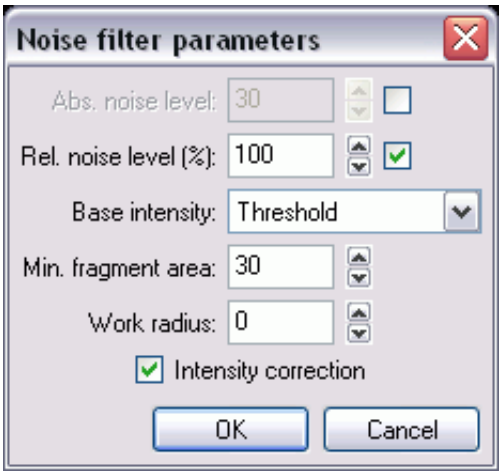
It should be emphasized that during the filtration procedure there is no physical removal of information from images, all further calculations in the program are done as if all filtered pixels had zero intensity. Therefore you can change the noise filtration parameters any time, not losing the data on noise pixels.

The noise filtration parameters settings are carried out by the user. The two main factors to select these parameters are the type of the used GDV Camera and specific features of the recorded GDV-images. In the Operation Manual to the GDV Camera you will find the recommendations helping to determine the correct parameter values. You need to follow the principle of selecting the most contrast part of the glow that can usually be seen with a naked eye. It is also important (when you are registering the test object images) to ensure such filtration parameters that the inner part of the glow would not contain noise pixels. For the convenience of selecting optimal parameters of noise filtration the program can switch to different types of image pseudocoloring. You can use the following way to control the correctness of the chosen parameters:

1. Set the «intensive» or «energy» palette for loaded images.
2. Select the noise filtration parameters so that to avoid a large number of yellow dots.
3. Switch to the «initial image» palette.
4. Switch off the display of the filtered points.
5. Make sure that the visible peculiarities of the subject's glow have not disappeared from the screen.
6. Switch to the «monotonous palette».
7. Make sure that the bright-blue dots do not fill the entire or almost entire glow area.
8. If necessary, repeat the procedure.

Naturally, the procedure of selecting the parameters is done only once using several samples of GDV-images of fingers and GDV-images of the test object captured with the given GDV Camera.

Several parameters of noise filtering are offered in the program:

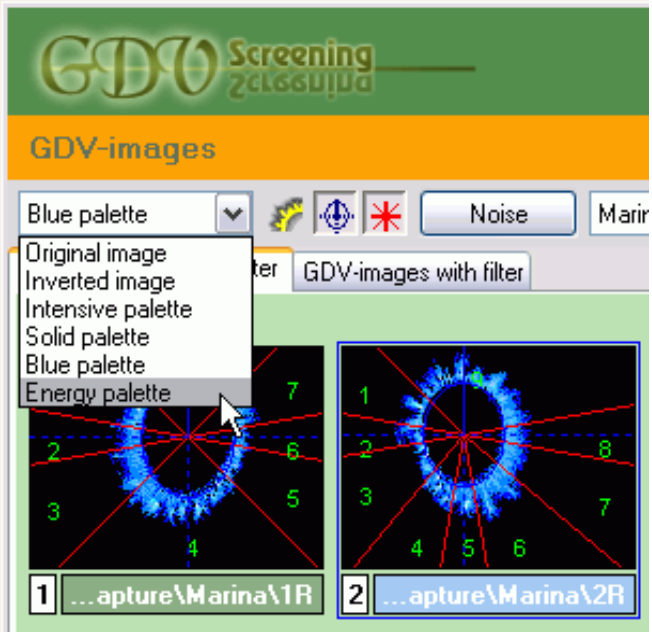


1. **Absolute noise level** – removal of all the image points whose intensity is lower or equal to the given noise level. It is recommended to select the value individually for each session of recording within the limits from 10 to 60.
2. **Relative noise level (%)** – the program automatically selects absolute noise level on the basis of the given percent of the value of base intensity. This algorithm selects the level of noise for each GDV-image frame individually. Base intensity is calculated on the basis of the analysis of histogram of image spectrum. Statistical characteristics of spectrum are taken as the values of base intensity. These characteristics correspond to the spectrum average value plus the value of its RMS, average value of spectrum, median of spectrum or peak of spectrum.
3. **Minimal fragment area** – removal of fragments of glow with the glow area less than the given minimal area of fragment.
4. **Working radius** – removal of all points of the image whose distance from which to the glow center is bigger than the given working radius. The glow center is either calculated automatically, as the center of gravity of all the glow points, or set by the user after manual correction of the glow center. The same value of coordinates of the glow center is used for all the frames of video file.
5. **Intensity correction** – the intensity of all pixels of a GDV image increases or decreases by the same value that is automatically calculated by the program, so as to bring the characteristics of the image spectrum most closely to the characteristics of the spectrum of test object GDV images taken during calibration.

Press **OK** to activate new parameters. The loaded GDV-images are automatically filtered from noise under new parameters and are renewed in the screen.

Pseudocoloring modes

You can view GDV images in various pseudocoloring modes, which enables to study the peculiarity of development of gas discharge more accurately. You can switch one pseudocoloring mode to another in the upper left corner of the page.



The following types of pseudo-coloring are provided in the program:

1. **Original image** – image as it was obtained from video camera and saved in AVI-file. Gray color palette containing 256 shades of gray (from black to white) is used.
2. **Inverted image** – inverted gray color palette is used, containing 256 shades of gray (from black to white). Particular small details and thin streamers are better seen in this palette than in the initial image.
3. **Intensive palette** – image points are colored in one of eight colors. The brightest glow points are colored in the shades of blue, less bright points are colored in the shades of red. Points, the intensity of which is higher than the noise level, but lower than the base noise level for the given frame, are colored in yellow. All image points removed by noise filtration are shown in white.
4. **Solid palette** – all image points removed by noise filtration are shown in black color, the rest of the points are shown in a monotonous bright color. Use this palette analyzing sector's glow area and glow area of the whole image in order to avoid optical illusion, which can occur if some points are not seen well, as the coloring is similar to the coloring of "noise" points.
5. **Blue palette** – color palette containing 256 shades of blue (from black to

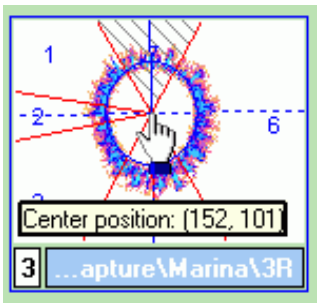
bright blue) is used. Points with minimal intensity of glow are shown in dark (almost black) shades, points with maximal intensity of glow are shown in bright (almost blue) shades. This palette displays the glow similar to the way it can be seen in instrument's electrode by the naked eye.

6. **Energy palette** – the image points are colored in one of the nine colors. The brightest glow points are colored in blues, the less bright ones are colored in reds, oranges and violets. All image points removed by the noise filtering algorithm are displayed in white.

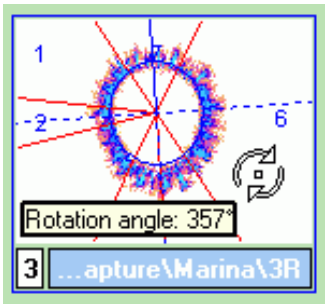
Correction of the center and ellipse for the GDV-image of finger

Determination of the ellipse and glow center is built automatically when the GDV-grams are load-ed. In most of the cases the contour almost absolutely repeats the finger contour. However, sometimes the glow has outbursts and dark areas, as a result of which the finger contour built automatically is not precise and requires manual correction. In this case the contour can be manually adjusted: the position of the center and the finger orientation can be corrected in order to have a more precise energy field picture.

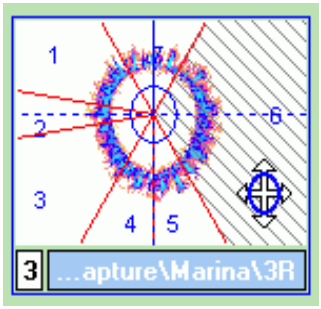
In order to correct the finger center position, move the mouse cursor to the displayed GDV-gram center, press the left button and move the cursor keeping the right button pressed.



The finger orientation on a GDV-gram can be corrected in a similar way. In order to do that, move the cursor to one of the displayed GDV-gram axes, press the leftt button and move the cursor keeping the left button pressed. The kept axis will be rotated against the GDV-gram center.

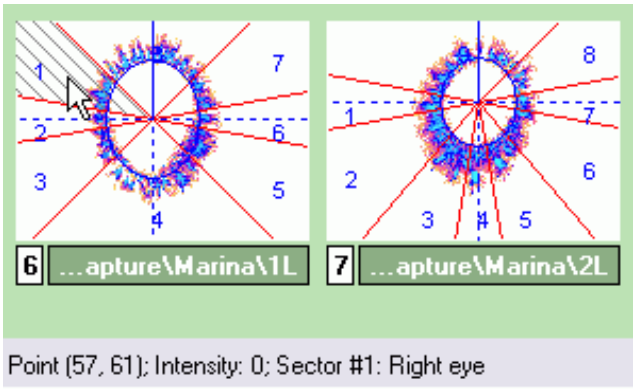


In order to correct the contour, mark the corresponding GDV-gram, move the cursor to touch the axis which will be used for correction, and keeping the keyboard Ctrl button pressed move the contour border.

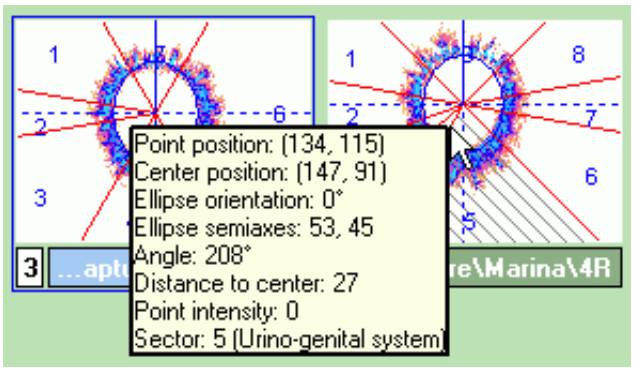


Besides, sector division of the corresponding finger is superimposed on the GDV images. Detailed information on the GDV image can be obtained using the mouse:

- When you move the cursor over the image the information is displayed in the lower part of the window.

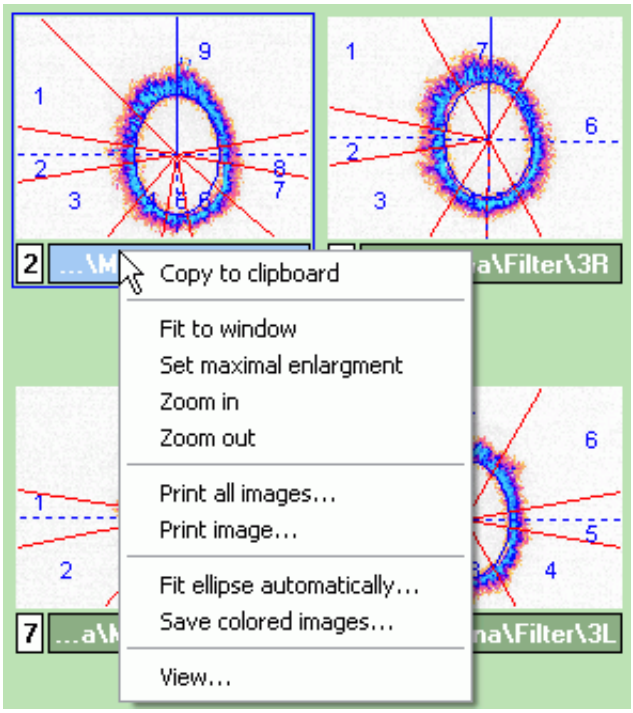


- When you press the right mouse button the information is displayed in the pop-up window.



GDV-Image Menu

Contextual pop-up menu can be called for any loaded GDV-image. Press right mouse button in the line showing frame's number and path to the file. Contextual menu appears. It consists of the following items:



Menu item	Operation
Copy to clipboard	Copies the frame, being in the screen, to the clipboard, taking into account coloring, sectors and viewing
Fit to window	Fits maximal quantity of GDV-images in the screen simultaneously (the quantity of images in the screen depends on the monitor resolution)
Set maximal enlargement	Scales up the selected GDV-image for the whole window
Zoom in	Scales up the selected GDV-image image
Zoom out	Scales down the selected GDV-image image
Print all images	Calls the Preview window
Print image	Calls the Print preview window and prints out the selected GDV image
Fit ellipse automatically	The program automatically recalculate inscribed ellipse overriding previously

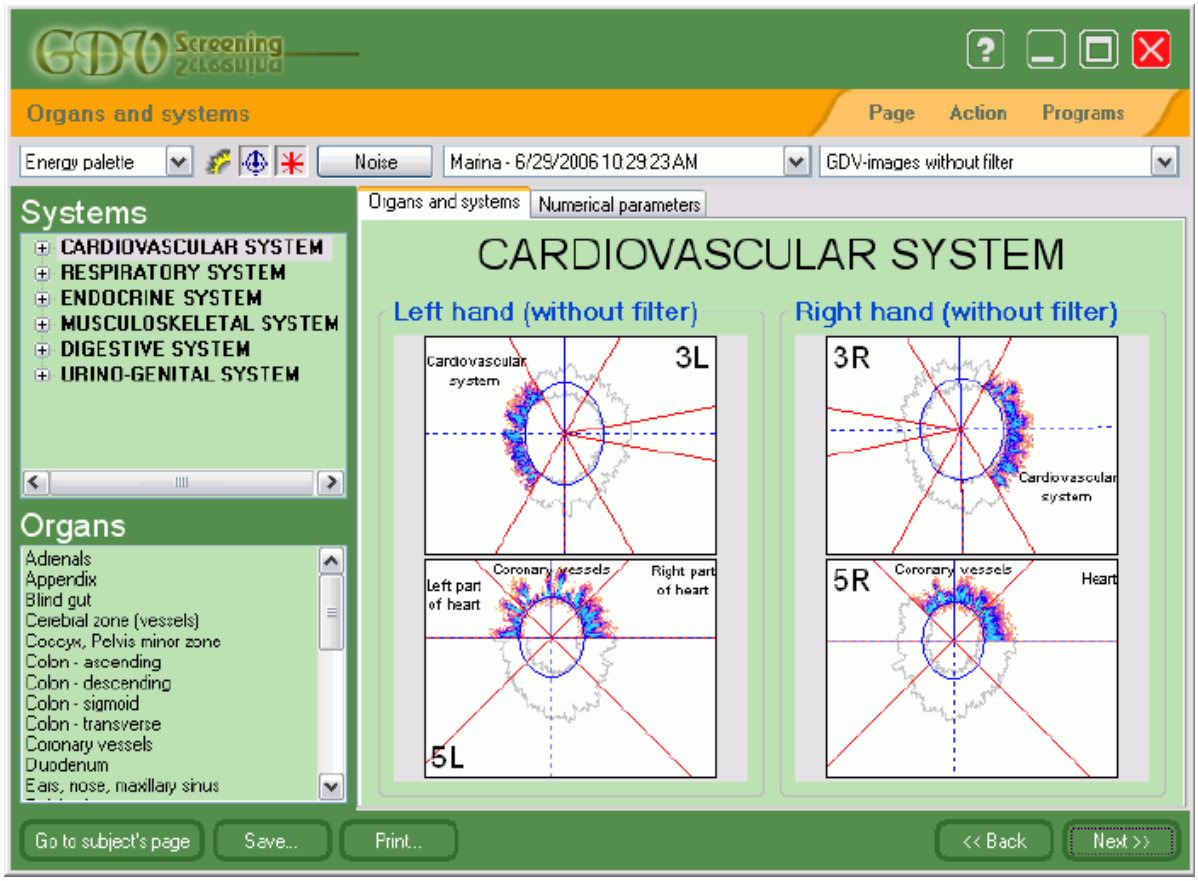
	made manual changes for single GDV-image or for all loaded GDV-images
Save colored images	Save GDV-images in the form of their display on the screen (taking into account current coloring type, sector fragmentation, etc.)
View	Calls GDV-image real size view window

Analysis of functional state of organs and systems

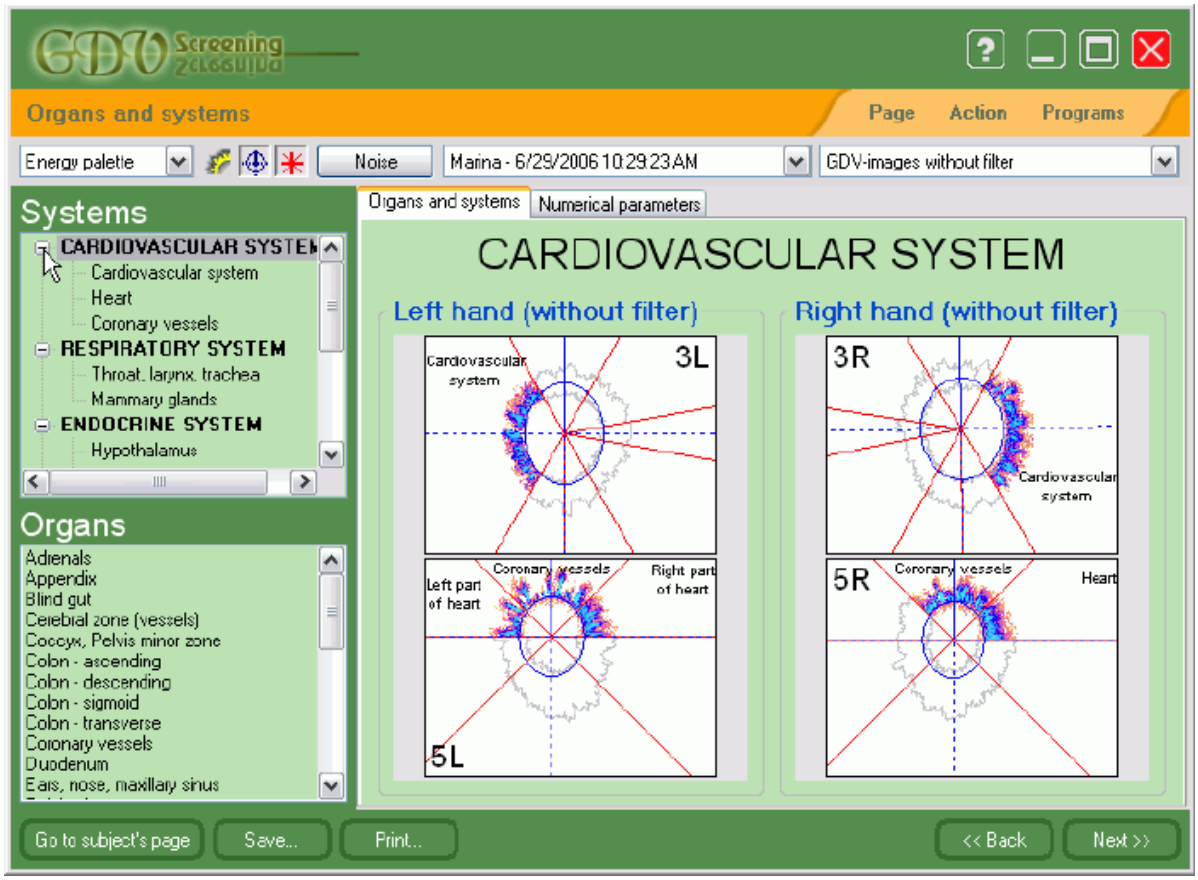
After loading GDV-images you can carry out the analysis of functional state of organs and systems using the **Calculate** button in the bottom right part of the **GDV-images** page.

The sector division is imposed on the GDV-images with each sector responsible for functioning of a certain organ or system. The sectors have different angle sizes; some systems and organs are represented on different fingers at the same time.

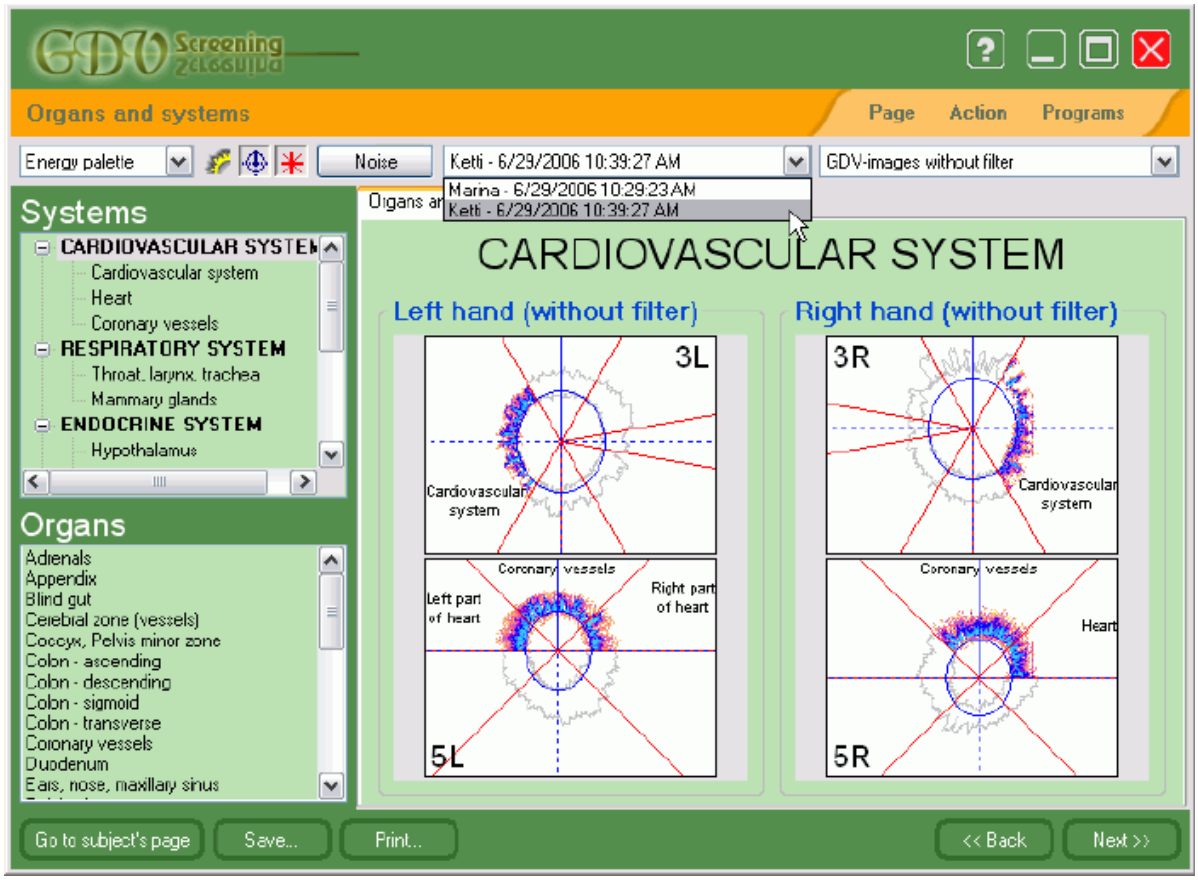
On page **Organs and systems**, in the left part, there are systems and organs, and in the right – GDV-images with indication of all sectors connected with these organs or systems. If you want to switch over to a particular system or organ you need to select it with your left mouse button.



When viewing the systems, on the right you will see GDV-images with all sectors indicated that refer to organs of this particular system. You can view a detailed display of systems by organs pulling down the system list (shown with a cursor in Fig.)

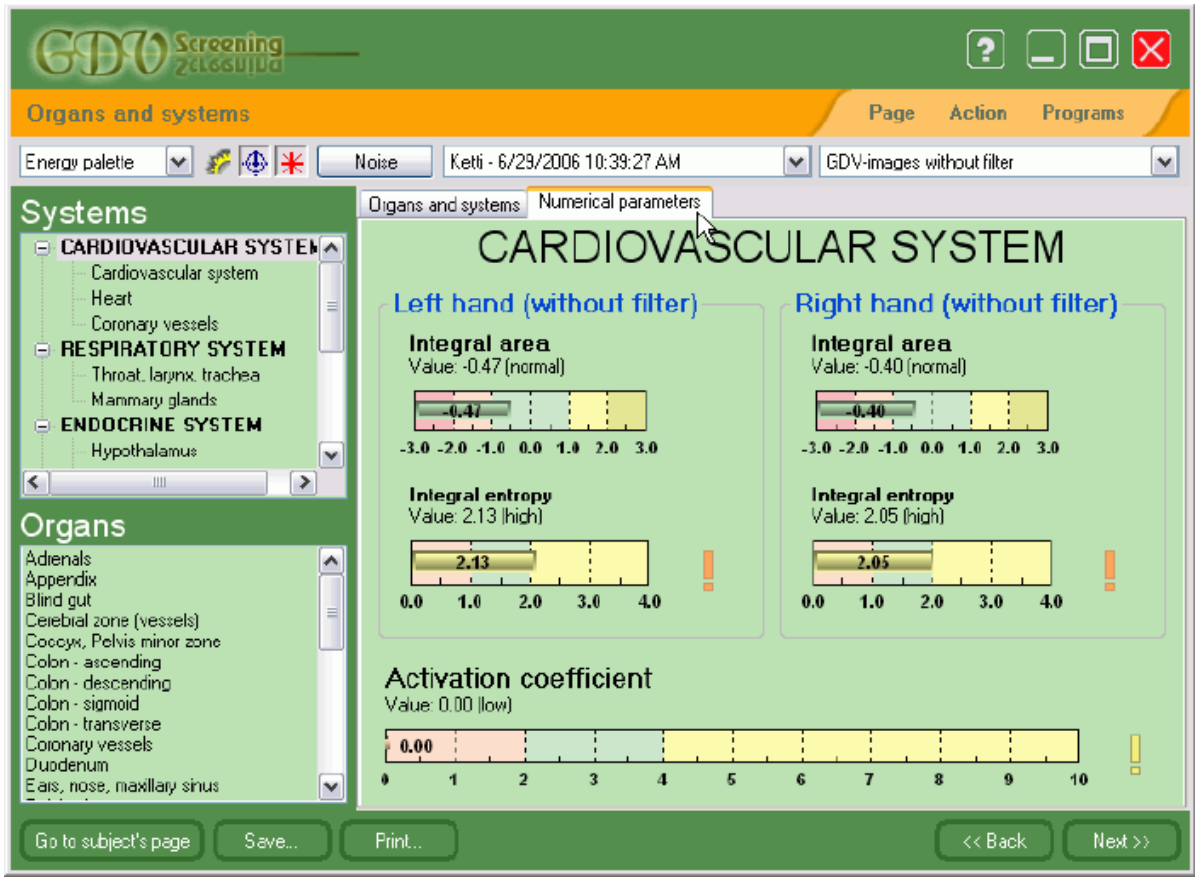


You can switch over from one subject to another, or view the GDV-images data with and without filter in the upper part of the page.


Organs and systems
Page
Action
Programs
Energy palette
Noise
Ketti - 6/29/2006 10:39:27 AM
Marina - 6/29/2006 10:29:23 AM
Ketti - 6/29/2006 10:39:27 AM
GDV-images without filter
Systems
CARDIOVASCULAR SYSTEM
Cardiovascular system
Heart
Coronary vessels
RESPIRATORY SYSTEM
Throat, larynx, trachea
Mammary glands
ENDOCRINE SYSTEM
Hypothalamus
Organs
Adrenals
Appendix
Blind gut
Cerebral zone (vessels)
Coccyx, Pelvis minor zone
Colon - ascending
Colon - descending
Colon - sigmoid
Colon - transverse
Coronary vessels
Duodenum
Ears, nose, maxillary sinus
CARDIOVASCULAR SYSTEM
Left hand (without filter)
Right hand (without filter)
3L
Cardiovascular system
Coronary vessels
Left part of heart
Right part of heart
5L
3R
Cardiovascular system
Coronary vessels
Heart
5R
Go to subject's page
Save...
Print...
<< Back
Next >>

Numerical parameters of organs and systems

On page **Organs and systems** there is the **Numerical parameters** tab where you can see the parameters displayed as histograms: integral area, integral entropy, activation coefficient. Calculation of parameters is carried out for each organ or system separately. If the parameter value exceeds the norm zone there appears a warning sign near the histogram: a twinkling exclamation mark.



The description of numerical parameters:

Integral Area

The integral area is characterized by the following levels:

The Norm (displayed by the green zone) – the optimal zone interval of quantitative variations of processes on the functional stimulation level, indicates the presence of normal structural and functional conditions for normal body and mind vital activities.

Below Norm (the red zone) – slowing down of biochemical and informational processes in the human body and organ systems disturbing an optimal mode in the body functional activity.
Slowing down of body and mind vital activities.
It can bring to dysfunction or pathology of certain systems and organs.

Above Norm (the yellow zone) – acceleration of biochemical and informational processes in the human body and organ systems. Switches the body to an extreme mode of functioning that can lead to overloading and dysfunction of human body and organ systems.

Integral Entropy

The integral entropy shows the functioning state of a cell, organ and the entire human body. The overall range of values is divided in three levels: Normal entropy (the value of the Integral entropy is within the green region), Increase of entropy (the yellow region) and Decrease of entropy (the red region).

Normal Entropy

The normal entropy characterizes active behaviour of all reactions and processes of vital functions supporting the adaptability and homeostasis on an optimal level.

An increase of entropy indicates the beginnings of new processes leading to an increase of ce or organ activity, i.e., joining a system of foreign components coming into reaction with the existing normal components thus causing a significant increase of intermediate and final products. Accumulation of new metabolic products leads to a disorder of normal functioning of a cell, tissue organ or the whole body due to their pathologic activity. Such processes as acidosis - oxidation, or alkalosis - alkalization of the medium are possible, which, in its turn can bring to a change of activity of normal components of the medium.

If high values are attained, physiological processes are of compensatory character and are aimed at keeping up the function and the protection of the cell, organ or body, but they also lead to emaciation due to irrational use of the reserves, and consequently, to various compensatory damages. In such cases entropy does not return to its normal value but remains on a somewhat increased level, since with such compensatory changes of structure the conditions for vital activity processes will also change.

A decrease of entropy is an evidence of inhibition of all oxidation-reduction reactions, reactions of catabolism and anabolism, i.e., elimination from the system of a large number of its components, cessation of various reactions, and disappearance of the medium for the processing of these reactions. This state can be found in pathology, for example, with atrophic changes, but can also be observed in the normal state (in sleep). A decrease of entropy can be observed, for example, in the presence of emaciation when there are no transformation products and all reserves are spent.

Activation index

The activation index indicates the level of psychic state of human.

The norm boundaries lie within the green region, i.e. from 2 to 4 units (these figures represent a conditional division of the psychic state level). If the parameter “Activation index” is within norm limits, it is an evidence of a normal psycho-emotional state of the subject at this moment of time. A normal psycho-emotional state means such state that is characteristic for this subject in daily life, if it is not pathologic. For instance, if a person is always in a somewhat excited state, it is normal for him, at the same time, when a person is ill and he features apathy and hypobulia (a decrease of will), such state is not normal as it is related to pathology.

If the Activation index lies within 4 to 6, it corresponds to a short-time change of psycho-emotional state of person in question caused by some external influence, i.e., exogenous changes. For example, it can show that the subject has experienced a short-time overstrain at work, or in his/her family, in public transport, etc. shortly before the measurements. The person may be under stress, at an anxiety level. In such case you need to offer him to relax for 15-20 minutes. However in this zone the activation index can also lie within the norm limits which is characteristic, for example, for energetic or physically strong people. Such Activation index can also belong to people in anxiety state, for example, athletes before a competition or students before taking examinations. In most cases when the Activation index lies within 4 – 6 units, we may say that it is a physiological, more often short-time increase of the psychic activity level.

When the Activation index is within 6 – 8 units, a developed exogenous deviation can be assumed, such as neurasthenia, or another neurosis, and also psychosis. In this case, the person can be recommended to change the work mode, sleep more, take multi-vitamins. Besides, he should be sent to a specialist for consultation. However it is worth taking into account that even such activation level increase is not necessarily the result of pathologic changes and can be attributed to an increased emotional level and caused by a response to various life situations.

The utmost degree of the Activation index increase is from 8 to 10. Such distribution corresponds to a stress at the stage of resistance. If the action of the stressor ceases at this stage, before emaciation appears, the organism will restore without any damage to health. However such high degree of index can be also observed during a pathologic stress – a distress.

If the Activation index is decreased and lies within 0 – 2, one can think of a depressive syndrome, of stress in the emaciation phase, and also of drug-induced decrease of the psychic activity level, for example, under the influence of tranquilizers, sedatives or narcotic preparations. Such distribution also occurs during the deep phase of sleep. Such level of the activation index can also be a norm for energetically or physically weak people.

If the parameter value does not fit the norm zone, a warning sign appears near the histogram – a twinkling exclamation mark.

In the lower part of the page there are the following buttons to work with the program:

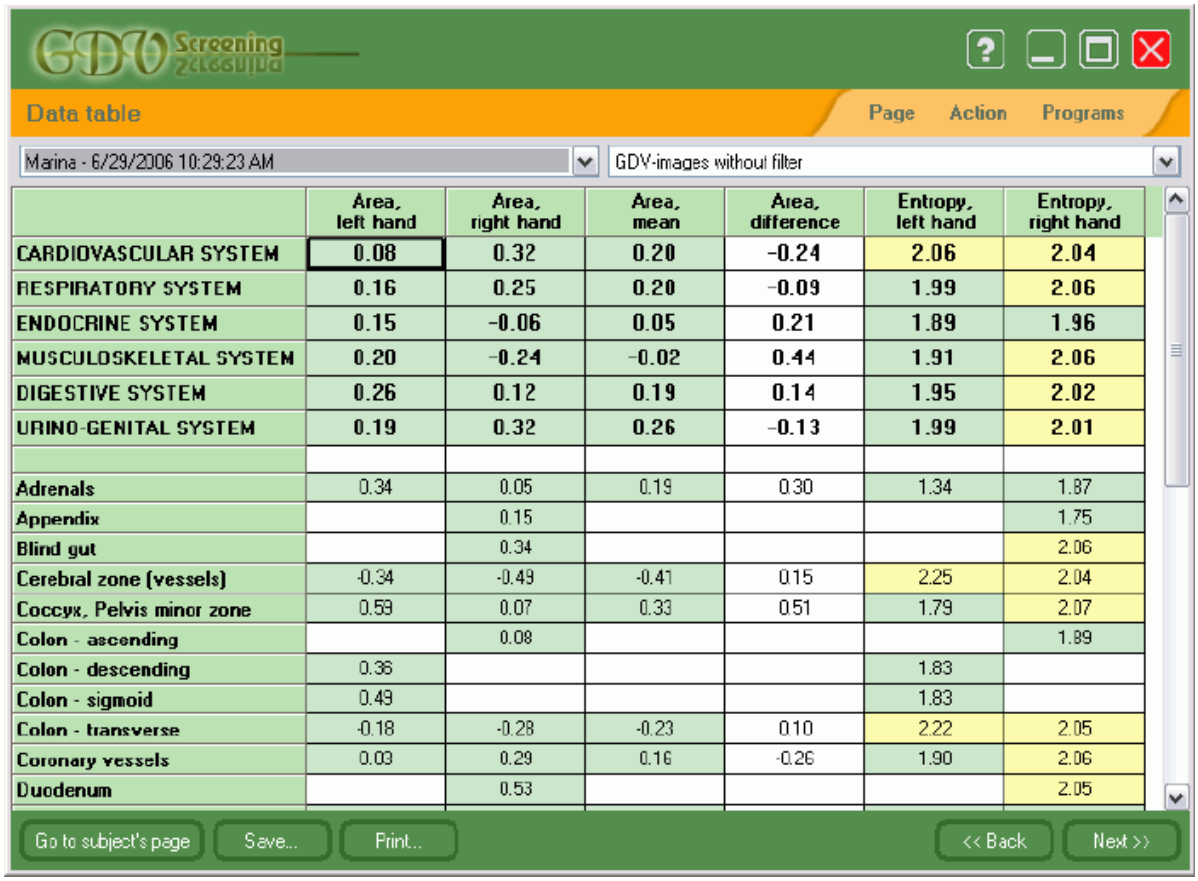
The **Save...** button saves histograms to a bmp-file.

Use the button **Print…** to print out the obtained data.

Press the button **Go to the subjects' page** to return to the page with the List of subjects.

Data table

The **Data table** contains all numerical data of organs and systems. If several captures are loaded into the program, above the table you can select the subject and capture for whom the table is displayed. You can also select the type of GDV-images for which the parameter tables is built (with or without filter).
The table has eight columns. The first one shows the systems and organs related to a particular sector, the second and third ones show the data about the glow area of the right and left hands, respectively. The fourth column calculates the average area; the fifth one shows the difference between the glow areas of the right and left hands. The sixth and seventh ones show entropy and the eighth one – the activation coefficient. The numerical data corresponding to norm are shown in green, below norm in red and above it in yellow. It is done for the convenience of viewing the table and possibility to determine which organs and systems are worth paying attention to.



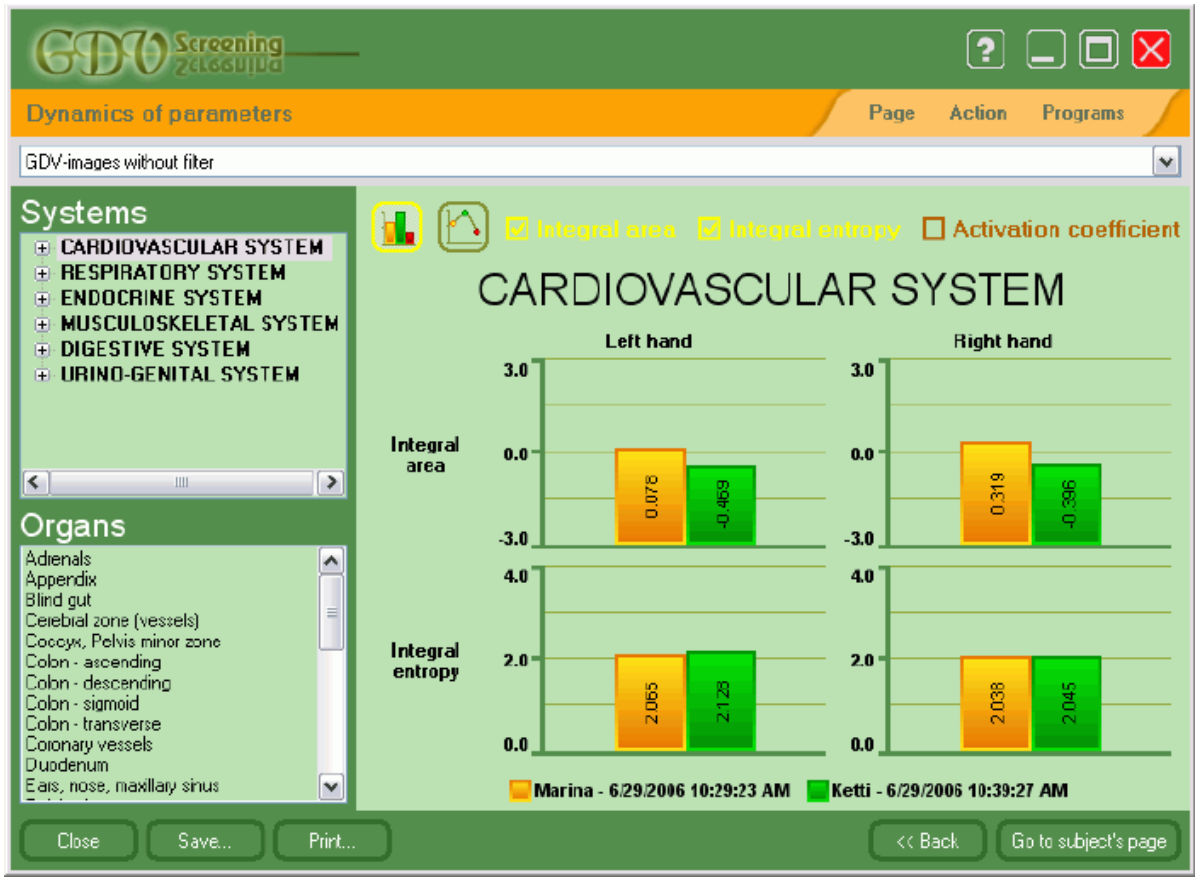
	Area, left hand	Area, right hand	Area, mean	Area, difference	Entropy, left hand	Entropy, right hand
CARDIOVASCULAR SYSTEM	0.08	0.32	0.20	-0.24	2.06	2.04
RESPIRATORY SYSTEM	0.16	0.25	0.20	-0.09	1.99	2.06
ENDOCRINE SYSTEM	0.15	-0.06	0.05	0.21	1.89	1.96
MUSCULOSKELETAL SYSTEM	0.20	-0.24	-0.02	0.44	1.91	2.06
DIGESTIVE SYSTEM	0.26	0.12	0.19	0.14	1.95	2.02
URINO-GENITAL SYSTEM	0.19	0.32	0.26	-0.13	1.99	2.01
Adrenals	0.34	0.05	0.19	0.30	1.34	1.87
Appendix		0.15				1.75
Blind gut		0.34				2.06
Cerebral zone (vessels)	-0.34	-0.49	-0.41	0.15	2.25	2.04
Coccyx, Pelvis minor zone	0.59	0.07	0.33	0.51	1.79	2.07
Colon - ascending		0.08				1.89
Colon - descending	0.36				1.83	
Colon - sigmoid	0.49				1.83	
Colon - transverse	-0.18	-0.28	-0.23	0.10	2.22	2.05
Coronary vessels	0.03	0.29	0.16	-0.26	1.90	2.06
Duodenum		0.53				2.05

The data table can be saved to a text file or printed out.

You can return to the page Subjects' list using the button **Go to subjects' page**.

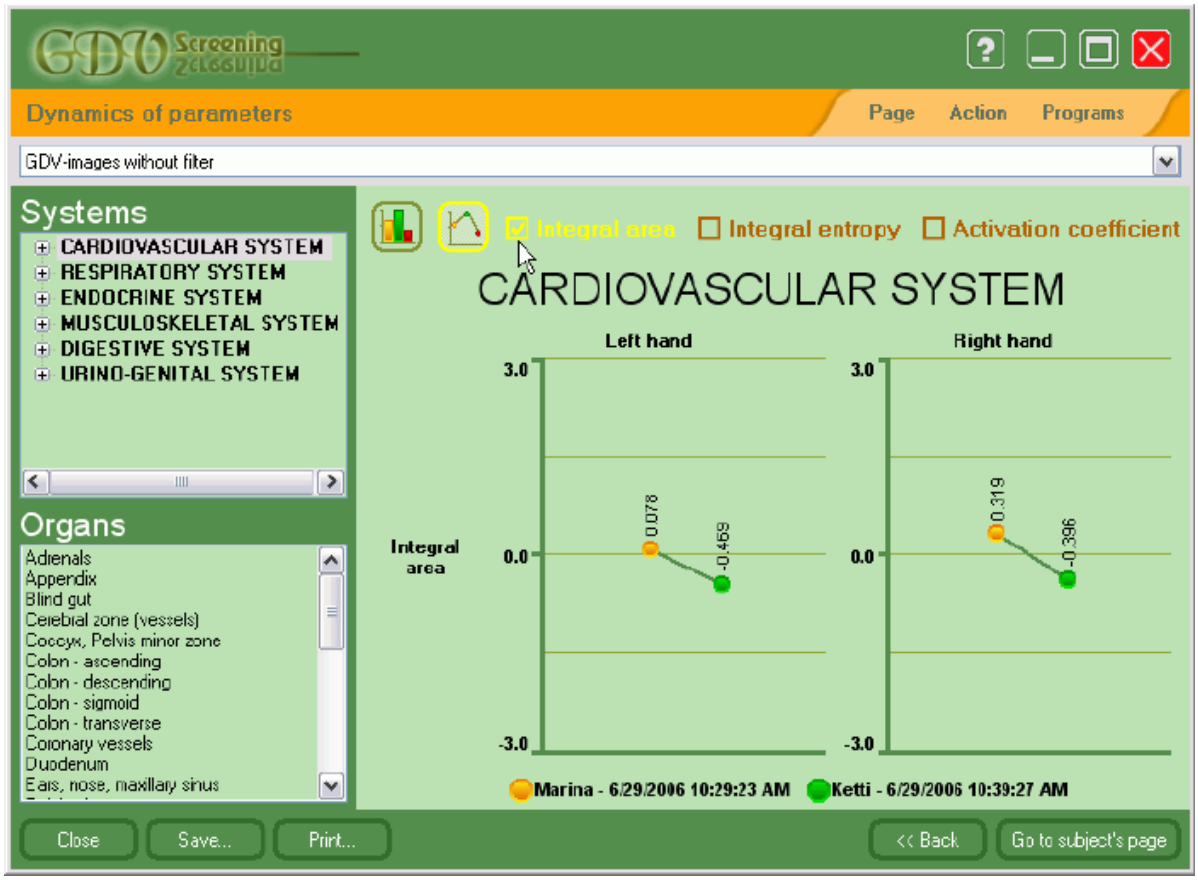
Dynamics of parameters

The **Dynamics of parameters** page is the last page of the program and shows the same parameters as on the tab **Numerical parameters** of the **Organs and systems** page but in the form of diagrams and plots.



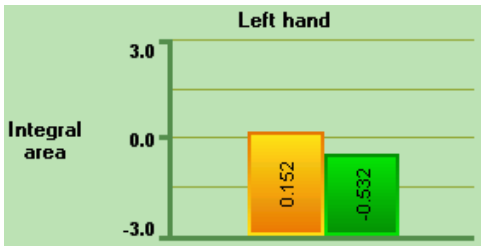
Each diagram shows the values of the corresponding parameter for all compared subjects. The diagram of each subject is shown in its own color. The legend in the lower part of the page shows the correspondence of colors and subjects.

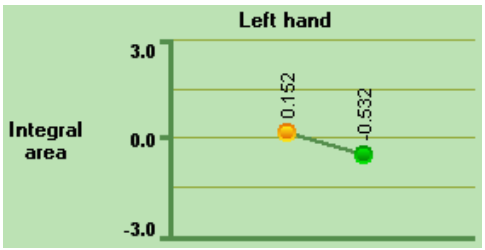
In the upper part of the page there are buttons to select a set of displayed parameters and buttons to select the form of display. By checking and unchecking the ticks of the buttons "**Integral area**", "**Integral entropy**" and "**Activation coefficient**" you can vary the content of parameters for whom the values are graphically displayed.



Switching over to organs and systems is carried out similarly to that on the previous pages.

In the upper left corner there are two buttons  and  to switch over to different parameter display modes among the diagrams and plots.



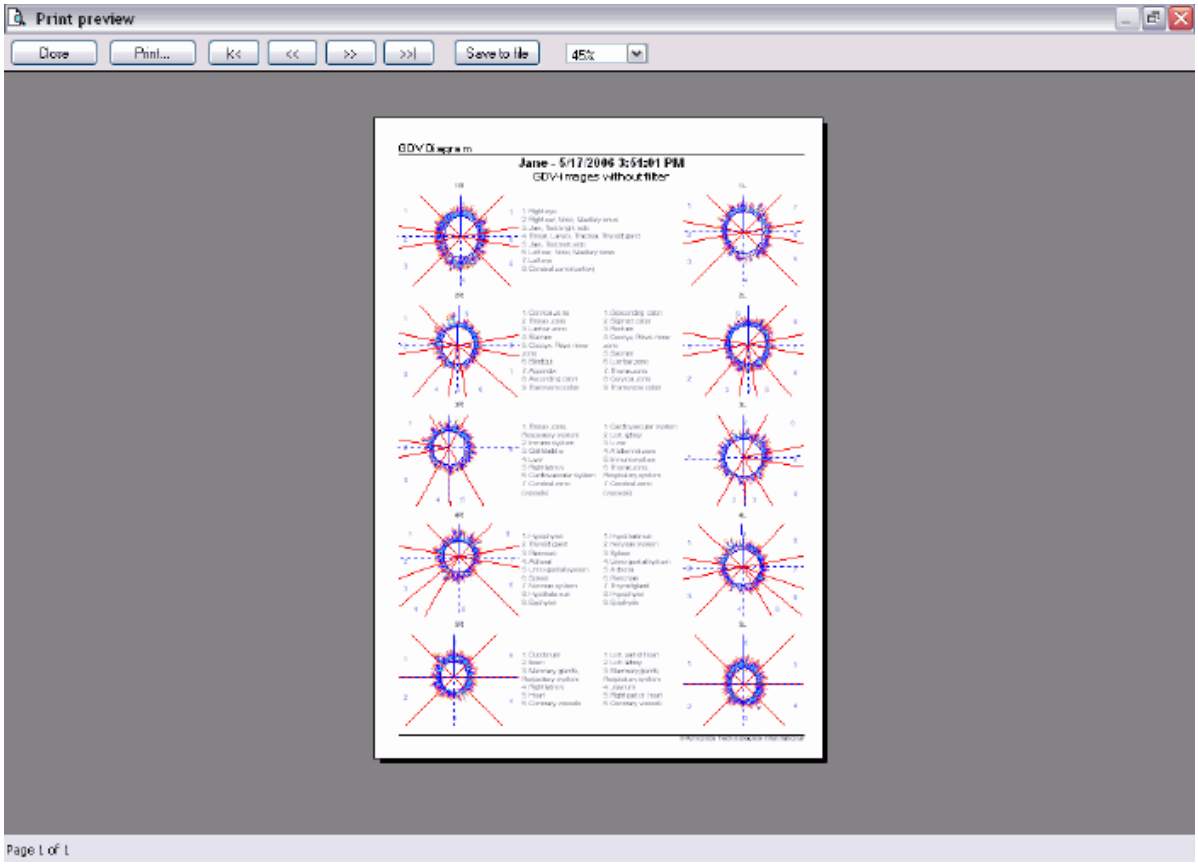


The parameter diagrams can be saved to a graphic file or printed out.

Print GDV-images

The program makes it possible to print out the loaded GDV images with sector division. Press **Print GDV images** on the GDV image loading page.

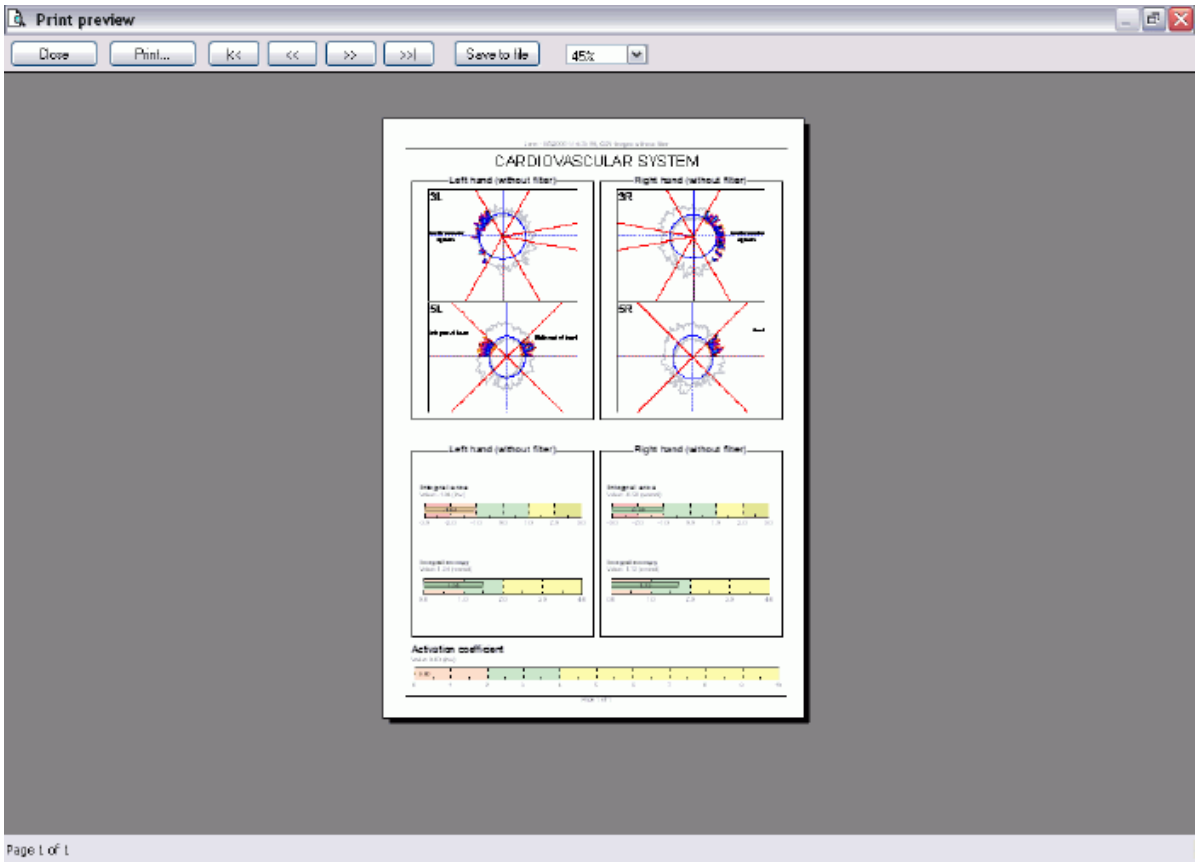
Before printing the program will open the preview window, from where the image might be printed or saved.



The description of the preview window operation is given in section Printing plots and tables.

Printing plots and tables

The **Print…** button opens the window **Print preview** and makes it possible to print out plots and tables on pages **Organs and systems**, **Data table** and **Parameters dynamics**.



There are several buttons in the tool bar of this window:

– closes the preview window

– switches to window “Print setup”, followed by printing

– enables to view the previous page and next one

– enables to view the first page and the last one

– enable to save the file of the printed page in Windows Bitmap (extension BMP) or Windows Enhanced Metafile (extension EMF) formats

– changes the scale of the preview page

Information on the number of pages is shown in the window status bar.

After pressing button **Print** window **Print setup** appears. If you have a color printer, the printer is automatically set for color printing. “Landscape" page setup is given by default.

It is advised to use the EMF format for saving pages, as, first of all, images occupy much fewer space on disk in this format than in BMP format. Secondly, when these images are scaled in documents (for example, in Microsoft Word) distortions are minimal.

Saving printed documents from the Preview window

Any document (a graph or GDV image) that is formed in the program can be saved from the Print preview window. To do this press the button **Save to file** in the upper part of this window.

The type of file is Windows Enhanced Metafile by default (EMF extension), but you can also select Windows Bitmap (BMP extension).

It is advised to use the EMF format for saving pages, as, first of all, images occupy much fewer space on disk in this format than in BMP format. Secondly, when these images are scaled in documents (for example, in Microsoft Word) distortions are minimal.